A Research-Based Evaluation Instrument of Teaching Performance Focused on the Learning Outcomes

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Abstract

All higher educational institutions in the Philippines have recently adopted the outcomes-based education (OBE), and this has resulted in the need to revise how the faculty is to be evaluated. This study developed an evaluation instrument of the teaching performance of the faculty based on the learning outcomes. The study was conducted at Bukidnon State University with college students randomly selected from the different colleges. Factor analysis was used to generate the constructs. The researchers used Develop, Pilot Test, Evaluate, and Implement (DPTIE) model. The five factors with the constructs are Factor I – Motivation for Learning and Lesson Presentation, Factor II – Management of Learning; Factor III – Innovativeness and Creativity, Factor IV – Mastery of the Subject Matter, and Factor V – Assessment of Learning. Items corresponding to these factors or constructs are found in the final instrument. The evaluation tool was found to be valid and reliable to measure the performance of faculty. It cannot be seen yet how this can be applied to OBE where outcomes of learning are emphasized because the new curricula have to be implemented. However, it is recommended that this evaluation tool be utilized by the students, chairpersons and deans to evaluate the teaching performance of the faculty.

Keywords: Research-based learning outcomes, outcomes-based education, factor analysis, evaluation tool, factor loadings

Introduction

All higher education institutions (HEIs) in the Philippines at present have begun adopting the most recent reform called outcome-based education. Outcome-based education (OBE) measures competencies. It is a student-centered approach to education that focuses on the intended learning outcomes resulting from instruction (Nicholson, 2011). This means that the students are ready to apply the learning they acquired inside the classroom to the workplace after finishing their courses. Outcome-based education as the name suggests utilizes the learning outcomes as a basis of assessment. Hence, a shift in evaluating the teaching performance that focuses on the learning outcomes is needed.

To prepare for OBE at Bukidnon State University, faculties of the different colleges were sent to OBE trainings, seminar-workshops, conferences and fora. Resource persons and OBE experts were invited to shed light on the implementation of how OBE can be carried out. Curricula of the different degree programs were reviewed and syllabi were revised to fit to the

Commission on Higher Education's (CHED) mandated OBE. Students had to be apprised to this educational reform because they are the recipients of this national shift. They also needed to understand its implication to their future.

Evaluation of the teaching performance can provide insight to the faculties on what is done well and how they can further improve their teaching. An evaluation tool can be designed and developed which will measure the outcomes-based teaching. This evaluation is a tool for growth. Hence, the need to develop and validate an evaluation tool that will consider the learning outcomes as suggested by Blooms (Brophy, 2011).

Marsh and Roche (1997) suggested that students' evaluations of teaching (SETs) have to be multidimensional, reliable, and stable. Also, it has to be relatively valid against a variety of indicators of effective teaching, relatively unaffected by a variety of variables hypothesized as potential biases (e.g., grading leniency, class size, workload, prior subject interest), and useful in improving teaching effectiveness when SETs are coupled with appropriate consultation.

One thing that is considered in the evaluation of teaching performance is its being multidimensional. This means that teaching is a complex activity that requires clarity, and interaction between teachers and students. In addition, the validity and usefulness of student evaluation for teaching performance depends on the content and coverage of the items. Poorly worded or inappropriate items will not provide useful information. Valid measurement, however, requires a continual interplay between theory, research and practice. Several theoretically defensible instruments with a well-defined factor structure have been reviewed (Centra, 1993; Marsh, 1987) but few have been evaluated extensively in terms of potential biases and validity.

On one hand, the reliability of evaluation of teaching performance is most appropriately determined from studies of inter-rater agreement that assesses agreement among different students within the same course (Gillmore, Kane, & Naccarato, 1978; Marsh, 1987). This is one of the requirements for developing any tool for evaluation of teaching performance. On the other hand, validity is the degree to which any measurement approach or instrument succeeds in describing or quantifying what it is designed to measure (Weiner, n.d.). These measures of reliability and validity are important in developing any evaluation material particularly the student evaluation of teaching performance.

Agsalod (2015) developed a faculty performance appraisal instrument for the Royal Police Academy in the Kingdom of Bahrain. The instrument that was developed underwent four phases: first, Conceptualization stage; second, Instrument Development and Validation stage; third, Try-out Stage; and fourth, Finalization and Development stage. The instrument was then subjected to another reliability test using Chronbach's Alpha where the responses of a full class of 25 students were analyzed and found that the instrument was valid and reliable. Another study of Sacay (2015) developed and validated the performance tasks based on Understanding by Design (UbD) as a guide for students in understanding the lessons on selected topics in Biology. It designed authentic assessments using the GRASPS elements of UbD to elicit evidence of understanding of knowledge and skills acquired with the help of the learning activities implemented in the classroom. UbD performance tasks were able to achieve the desired knowledge and skills stated in Stage 1 of the UbD Plan. It recommended that UbD-based performance tasks be fully implemented in all topics in Biology.

Also, a research conducted at nine schools in the Division of Manila aimed to develop an assessment portfolio on the use of UbD for science teaching. It sought to construct instruments that assess the use of UbD and establish the content and construct validity results by using contrast groups. The samples were students, teachers and department heads who had undertaken UbD, randomly chosen using the fishbowl method. The experts raised

no major concerns regarding the content validity of the indicators. The indicators per domain were found to be well-defined, related to the outcome being measured, consistently useful by different scores, understandable to respondents, fair and free from bias, manageable, and practical (Rodil, 2015).

Another study was conducted on the development and validation of computer-aided supplemental material in Science and Health for Grade III pupils at the Dominican School in Manila. The interactive computer development model was used which involves five different phases: needs analysis, design, development, implementation and validation. The teacher and administrator respondents pointed out that Unit 3 – Matter, Energy, Force and Motion - needs to be supplemented by the computer-aided supplemental material. The validated materials can also serve as a learning tool that can contribute to the progress of the teaching-learning process (Ibay, 2014).

Monforte (2014) developed a tool on the performance evaluation system for a private basic education institution through a descriptive-action research. Participants included three (3) campus principals, four (4) subject coordinators, 44 teachers, 483 students and 20 faculty members. Two instruments used were a 3-point scale survey questionnaire on the current evaluation instrument of Immaculate Conception Academy (ICA), a private school in Dasmariñas, Cavite, and a second survey questionnaire on the proposed evaluation instrument using a 5-point scale. The study found that the performance rating instrument currently used has deficiencies and defects particularly in the choice of words. The proposed rating instrument was also found to be acceptable and appropriate by the teacher-respondents.

Hence, in this study it developed and validated an outcomes-based student evaluation for teaching performance of Bukidnon State University. Specifically, the study assessed, developed, designed, implemented and evaluated a student evaluation tool for teaching performance. The evaluation tool for teaching performance can be used by the students, chairpersons, peers and deans.

Conceptual Framework

The study is anchored on the concept that teaching performance is best evaluated using an evaluation tool appropriate for actual teaching. Considering the paradigm shift of the educational curriculum from input-based to outcomes-based education, it is necessary that the evaluation tool measures the existing curriculum, the OBE curriculum. This concept is contained in CHED Memorandum Order No. 46 s. 2012 on the implementation of policies and standards following the Outcomes-based Education Curriculum.

According to Spady (1994), OBE means clearly focusing and organizing everything in an educational system around what is essential for all students to be able to successfully achieve at the end of their learning experiences. McNeir (1993) opined that OBE specifies the outcomes the students should be able to demonstrate upon leaving the system with students mastering those outcomes.

Additionally, Harden (2002) claimed that OBE is characterized by "the development of clearly defined and published learning outcomes that must be achieved before the end of a course; the design of the curriculum, learning strategies and learning opportunities to ensure the achievement of the learning outcomes; an assessment process matched to the learning outcomes and the assessment of individual students to ensure that they achieve the outcomes; and the provision of remediation and enrichment for students, as appropriate.

An important component in the development of an instrument is that of the pilot testing, which is a small-scale trial run of all the procedures planned for use in the main study (Monette et al., 2002, p. 9). For instance, this study was pilot tested on a small number of tryout participants. Subsequently, a pilot test, adapted to the individual needs of each state will occur and a larger scale test will happen in individual states. Pilot testing of an instrument

(e.g., questionnaire) administered for research purposes is the standard in developing any tool. In this study, after the tryout, results were analyzed as the basis for the evaluation of the developed instrument where implementation followed.

Instructors play an important role in carrying out the OBE implementation. But with the recent educational reform, questions are raised, e.g., Are instructors equipped with teaching the OBE? Is the paradigm shift from the previous curriculum to OBE in place in the respective institutions? Assessing students' learning is then very important. Students' learning can be measured as outcomes which can be seen through the evaluation results of the faculty.

In other countries, student evaluation of teaching performance, or student ratings of their faculty, is one of the most controversial techniques used to identify teacher effectiveness. Few faculty members question the usefulness of ratings in providing feedback about teaching that can result in improved instruction, but many continue to challenge student rating use in making decisions (Marsh, 1984).

Gagñe's work (1985) focuses on intentional or purposeful learning, which is the type of learning that occurs in school and applied in the real workplace. He believed that events in the environment influence the learning process. His theory identifies the general types of human capabilities that are learned. These capabilities are the behavioral changes (learning outcomes) in a learner that a learning theory must explain. Once the learning outcomes are identified, an analysis of the conditions that govern learning and remembering can occur.

In the State Universities and Colleges (SUCs) in the Philippines, students' evaluation of teaching performance is a semestral activity. The faculties are evaluated by the students, peers, and supervisors like the chairperson and dean. Each institution has its own evaluation instrument. In the case of Bukidnon State University, the evaluation of teaching performance instrument that is used at present was developed in the late 80s. This instrument was found effective in evaluating the teaching performance of the faculty in the university. However, with the change to OBE, there is a felt need to develop and validate a new instrument.

To improve student learning, one does not change the structure. The instructional practices of the faculty can be changed. The schools that seem to do best are those that have a clear idea of what kind of instructional practice they wish to produce, and then design a structure to go with it (Elmore, 2010).

Outcome-based education can be summed up as a results-oriented thinking and is the opposite of input-based education where the emphasis is on the educational process. An outcome-based instruction does not mean curriculum-based with outcomes sprinkled on top (Spady, 2014). It is a transformational way of doing business in education. Changing to an outcome-based curriculum requires vision, leadership, and the commitment of large numbers of faculty which takes time and collaborative efforts of everybody in the university (Davis, 2003).

With this paradigm shift, every institution is in the process of aligning its curriculum including the syllabi to outcomes-based. Even institutional, regional and national goals and objectives must be aligned to OBE. In the outcome-based evaluation instrument, the higher order questions on critical thinking skills are evident in measuring the teaching–learning processes (Renaud, 2002). There is therefore a need to align the evaluation instrument of teaching performance to an outcome-based evaluation. This can be realized using a construct validation approach where effective teaching will be measured through a valid and reliable students' evaluation instrument (Murray, 2005).

Methodology

The study developed and validated an instrument for evaluating the teaching performance of the Bukidnon State University faculty. The instrument is intended for students, chairpersons and deans to evaluate the teaching

performance of the faculty.

The researchers arbitrarily followed the Development, Pilot Testing, Implementation and Evaluation (DPTIE) model. The development phase generated the item pool from the students, faculty and deans. During this phase, the researchers constructed and developed the evaluation tool with the help of the students, faculty and deans. Consultations were done with the faculty and deans as to the appropriateness of the items to be included in the evaluation tool for teaching performance.

The researchers believed that the DPTIE model was appropriate to evaluate the teaching performance of the faculty. As observed, the present situation needs to change the input-based curriculum to outcomes-based curriculum. There is no need for the assessment phase as this is no longer needed since the evaluation tool does not measure the outcome-based curriculum.

The next was the implementation phase. The implementation refers to the actual delivery of the instruction, whether it is classroom-based, laboratory-based, or computer-based. The purpose of this phase is the effective and efficient delivery of instruction. This phase must promote the students' understanding of the material, support the students' mastery of objectives, and ensure the students' transfer of knowledge from the learning to setting the goals.

The last phase was the evaluation phase. This phase measures the effectiveness and efficiency of the instruction. Evaluation occurs throughout the entire process of instrument development or design process within phases, between phases, and after implementation. This was done through a series of consultations with the experts who made the content validation of the instrument as well as the feedback from the students regarding the evaluation tool.

Factor analysis was used to establish the sets of questionnaire items that are in fact measuring the same underlying factor (perhaps with varying reliability) and so can be combined to form a more reliable measure of that factor. The participants of the study were composed of six deans, 10 chairpersons, 80 faculty and 1,250 college students purposively chosen except for the students where random selection was employed. Content validity was done by experts not only from the university but also from the other SUCs. Construct validation was employed in which factor analysis was used to generate the constructs.

Instrument Development and Validation

The development was done following the procedure as follows: The researchers conducted a computer search on the higher order level of learning outcomes verbs to assess the performance of faculty according to Bloom's Cognitive Taxonomy. After finding some materials, the researchers formulated 50 items which were submitted to the academic deans for face validity. After incorporating the suggestions of the deans like some verbs were changed while some were removed for similarities and replaced through their suggestions, the instrument was finalized.

Fifty items were considered upon the recommendation of the professors based on Bloom's Taxonomy of Educational Objectives (Bloom et al., 2001) to express learning outcomes that reflect cognitive skills. The items ensured that they are focused on what the learner should be able to know and do at the end of the course and are therefore achievement-oriented.

The instrument was pilot tested with 200 students for the first tryout. Data were subjected to reliability analysis and it garnered a reliability coefficient of 0.87 with 10 items discarded due to lower item-total correlations, thus, retaining only 40 items. The 40 items were administered to 1,250 students of Bukidnon State University. Data were analyzed using Factor Analysis which resulted to five (5) Factors which were labeled with the corresponding constructs.

The instrument was developed considering the shopping list of verbs arranged according to Bloom's Taxonomy of Learning. In general, cognitive competency in a field begins with knowledge level learning and advances up the

taxonomy to comprehension, application, and then the higher order skills involving analysis, synthesis, and evaluation or problem solving.

The item pool was generated with the participation of both the undergraduate and graduate students as well as the faculty and the deans of the different colleges. These items were submitted to professors from other universities for face validation.

The researchers floated the questionnaire to 1,250 students of the five (5) colleges of Bukidnon State University and the Graduate School. The 200 sample students for the pilot study were excluded. The data were subjected to Factor Analysis using the principal axis factor analysis and factor solutions using the Statistical Package for Social Sciences (SPSS) software.

Results and Discussion

The data from the 1,250 students were subjected to Factor Analysis to generate constructs or concepts that will measure the learning outcomes in evaluating the performance of the faculty. Results revealed that there were five (5) factors generated. Different indicators clustered together among the 5 factors which the researchers considered in labeling. Some factors loaded two times in different factors, however, the researchers utilized their best judgment as to where to consider them considering the highest factor loadings. The indicators of each factor provided the researchers with ideas in labeling the factors. The labeling of these indicators was solicited from the content validators and the faculty which in turn were presented to the students for further comments. The factors with the corresponding factor loadings are as follows:

The results show that the faculties prepare learning activities which effectively achieve the intended learning outcomes and this is the same finding observed by Kyriacou (2007). It means that at the start of the lesson, all instructors need to have some idea of the learning they wish to take place and how the lesson will facilitate that learning. As shown in this study, instructors motivate the students and thus set the mood of the class to get ready for the lessons. This practice is typical and evident in an ideal classroom setting.

In this evaluation instrument, presentation of the lesson follows where indicators clustered on the motivation for learning as shown by its factor loadings. This resulted in assigning Factor I a label of construct called Motivation for Learning and Lesson Presentation. It means that these groups of items correlate with each other to measure the identified construct.

Table 1
Factor 1 Constructs

Factor I - Motivation for Learning and Lesson Presentation	Factor Loadings
applies motivational activities to activate interest on the lesson to be taught	0.732
motivates students to participate in class through discussions and asking questions	0.708
discusses lesson objectives	0.699
explains main points in lectures and discussions	0.639
recognizes students' opinions and ideas	0.621
relates prior knowledge to personal and social experiences	0.604
connects new lesson to previous lessons	0.595
explains ideas and concepts clearly and distinctly	0.587

One of the characteristics of OBE is clarity of focus which means having specific outcomes and a strong sense of purpose to both the teacher and students (Brandt, 1998). At the start in the lesson preparation, the motivation and lesson are already interwoven. This includes the lesson objectives, guide questions and the discussions that follow. From the start to the end all the procedures of the lesson are linked. This implies that in the planning of the curriculum the teacher has to start from the top by setting the outcomes of the course, what should be accomplished by the students. From the top it goes down to the activities, then to the topics, objectives and finally the motivation. This is the difference between the

traditional curriculum and the outcome-based instruction which is from the top-down as conceptualized by Spady. This means therefore that there should be a strong sense of purpose in the teaching-learning continuum in that the students must be able to perform a function as a result of the instruction.

Factor II shows the indicators that are evident of learning activities such that variety of pupil involvement in the lesson is seen to be productive. With the many students in the classrooms, instructors must have a way of managing the learning activities. Haydn (2007) emphasized that managing and organizing the learning activities imply that an instructor maximizes pupils' productive involvement in the lesson. This is an indication of a good lesson management. The factor loadings revealed that these groups of items measure the construct management of learning. This factor is then labeled as Management of Learning.

The important task facing the instructor is to elicit and sustain students' involvement in the learning experience throughout a lesson which will lead to the learning outcomes. Classroom observations revealed that learners' needs are diverse. Instructors should be able to handle this challenge. Students' interest in the classroom necessitates varied learning activities so that they will not be bored. Instructors' skillful lesson management is primarily a combination of the learning potential of an activity and the degree of sustaining learners' involvement. Choosing the most appropriate teaching strategies is needed for maximum learning (Dyer, 2013). This means that varied teaching strategies and techniques clearly improve student performance.

Table II
Factor II Constructs

Factor II - Management of Learning	Factor Loadings
values diversity among learners	0.669
solves problems related to classroom situations	0.631
demonstrates the knowledge of concepts presented in the lessons	0.570
sorts questions clearly and concisely	0.557
creates an atmosphere which actively encourages learning	0.547
implements appropriate action when students appear to be bored	0.539
chooses strategies to maintain students' attention	0.513
demonstrates systematic classroom management	0.505
generates possible topics for research and extension projects	0.466

Spady (Brandt, 1998) further gave another characteristic of OBE. OBE expands opportunities for students to demonstrate their learning in different ways, and they must have numerous opportunities to demonstrate the outcomes, not just one. Under the items which fall on the construct of Management of Learning, classrooms are places where individual differences occur and accepted with teachers providing opportunities for them. These are reflected in the outgrowths applied in research and extension activities. In the recent years in the Philippine setting the faculty and students are involved intensively in extension activities where the latter apply their learning to the communities. This implies that teachers must have varied instructional strategies and techniques so that students can demonstrate the concepts that they have acquired.

Factor III constructs show the indicators on innovativeness and creativity that are manifested by a classroom instructor. These indicators show evidence that can be captured and observed by the students from their instructors/professors. In the outcomes-based curriculum, every teacher possesses creativity and innovativeness in facilitating learning. Classroom activities of students have to be carefully planned so that they can lead to the attainment of learning outcomes. Creativity and innovative thinking are equally important for every instructor so that students would attain meaningful learning (Navarro & Santos, 2012).

A good instructor has to exhibit her/his own innovativeness and creativity in the

classroom. First, there must be an inherent application component, as West and Farr (1990) describe it, for any set of actions to be classified as an innovation. This clearly distinguishes where innovation from creativity in that workplace, innovation involves the 'intentional introduction and application' of new and improved ways of doing things. Creativity, on the other hand, can also refer to idea generation. That is, an innovation may be a common practice in other organizations but it would still be classed as such if it is new to the unit under research (i.e., relative novelty). Creativity is a process of having original ideas that have value, and involves putting one's imagination to work and making something new (Robinson, 2009). In this instrument, both innovativeness and creativity are combined with similar indicators.

Table III
Factor III Constructs

Factor III - Innovativeness and Creativity	Factor Loadings
utilizes appropriately varied materials beyond the textbook	0.645
uses appropriate visual or auditory materials	0.622
establishes evidence of preparation and planning	0.514
applies techniques appropriate to the lessons	0.466
integrates thought-provoking questions effectively	0.459
sets reasonable schedule for accomplishing classroom tasks	0.422

Spady (1994) describes OBE as having outcomes which are of high-quality, culminating in demonstrations of significant learning in context, complexity, generalizability, and significance. This implies that teaching-learning contexts must reflect innovativeness and creativity. Teachers must provide environments for life-role functioning. This is the essence of OBE because it aims to make the students perform roles which are expected of them. This is the meaning of contextualizing learning so that when they finished with the course, they can apply those competencies and skills in occupations they have chosen. Hence, teachers must be creative and innovative in findings strategies and activities that ultimately will produce those skills.

Factor IV are constructs indicating how instructors have complete control of the teaching-learning situation. They exhibit the knowledge and skills that allow them to do, use or understand their content areas, teaching strategies, classroom management, psychology and other constructs that make the classroom an ideal place for learning. This entails that instructors are masters of their content areas, they have organizational skills, can move students to the application phase of the lesson, able to link the topics, relate the lesson to the mission, vision and goals of the institution, and can communicate effectively. These constructs belong to mastery of the subject matter.

Table IV
Factor IV Constructs

Factor IV - Mastery of the Subject Matter	Factor Loadings
demonstrates mastery of subject matter	0.584
organizes lessons logically and sequentially	0.564
integrates lessons with practical applications	0.454
demonstrates the ability to localize classroom instruction	0.463
establishes relationships among topics discussed in the lesson	0.450
relates the mission, vision, core values and quality policy of the university	0.434
uses the language for the subject effectively	0.420

Grossman, Wilson and Shulman (1989) reframed a definition of subject matter mastery to include "nature, form, organization and content of teacher knowledge" (pp. 25-26). This implies the links between the knowledge that teachers possess and the instructional actions they use, amongst others. Cess-Newsome (1999) also gave another set of inclusions for mastery of subject matter which are content knowledge,

pedagogical knowledge, curricular knowledge, and knowledge of educational goals. Subject matter therefore has a broader meaning than just topic because amongst others it includes teaching strategies.

The focus of outcomes is to master subject matter content (Spady & Marshall, 1991; Spady, 1994; Brady, 1995) where content is integrated and learning is relevant and connected to real-life situations. OBE is based on identifying and listing the generic competencies for a particular job or a range of job activities at a particular level. This is accomplished when the subject matter is linked to the objectives, strategies, assessment and finally the functions that learners are expected to do in their future roles.

As shown in Table V, this group of items form into one construct with the corresponding factor loadings. Thus, Factor V is labeled Assessment of Learning. Hargreaves (2010) defines it as monitoring students' performance against targets or objectives, using assessment to inform next steps in teaching and learning, and giving feedback for improvement. In the present study, it includes evaluating students' understanding, using other forms of assessment, rating students and other constructs.

Spady (1994) wrote that the development and implementation of outcomes today is significant. Do the outcomes we expect students to demonstrate matter in the long run—in life after formal schooling? This is an important consideration when teachers plan their assessment of students' learning. It starts with student understanding. Students should thoroughly internalize the learning so that they can apply their knowledge in their lives, after class or even after graduation. This thought proceeds to the next idea: are the teachers able to interpret students' actual performance so that they will be guided even more?

What this means is "outcomes are high-quality, culminating demonstrations of significant learning in context. The demonstration is the key word; an outcome is not a score or a grade, but the end product of a clearly defined process that students carry out".

Table V
Factor V Constructs

Factor V - Assessment of Learning	Factor Loadings
asks clear and easily understood questions	0.559
recognizes indication of student understanding	0.528
analyzes and interprets students' performance in the exams	0.508
employs alternative forms of assessment other than quizzes and long exams (such as journal, portfolio, reflection/reaction papers, projects, reports, etc.	0.501
administers formative and summative tests to determine whether lesson objectives are met	0.499
assesses students' readiness for instruction	0.489
rates students' answers to test questions fairly	0.444
asks questions using higher order thinking skills	0.427

Conclusions and Recommendations

The evaluation tool for teaching performance generated five (5) factors, namely, Factor I - Motivation for Learning and Lesson Presentation, Factor II - Management of Learning, Factor III-Innovativeness and Creativity, Factor IV - Mastery of the Subject Matter and Factor V - Assessment of Learning. Additionally, the newly developed tool for teaching performance is valid and reliable and ready for use by the students, faculty, chairperson and the dean as raters to evaluate the faculty. Hence, in this study it developed and validated an outcomes-based student evaluation of teaching performance for Bukidnon State University. It is recommended that the evaluation tool be utilized by the students, chairpersons and deans to evaluate the teaching performance of the faculty. In addition, another round of validation of the evaluation tool can likewise be recommended after one year of implementing the new curricula, the outcomes-based education curricula of Bukidnon State University.

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