Effect of Rubrics on Enhancement of Student Learning

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Contextualization

Empirical research on the effectiveness of rubrics has primarily concentrated on its contribution towards improvement in academic performance, as reflected in attainment of higher grades. Its role in assessing the other dimensions of Student Learning (SL) such as attitudes, behaviours and perceptions that affect students' inclination and ability to learn has been largely unexplored. There is also a paucity of literature on how rubrics can be used for informing course delivery and course design. The objectives of the study are derived from these gaps in literature.

Abstract: *This paper reviews the current literature on the impact of rubrics on student learning with a view to identify potential areas for further research. It presents the essence of the doctoral research proposal titled 'Investigating the Effect of Assessment on Enhancement of Student Learning in a Business Program: A Rubrics Approach'. The proposed study seeks to explore the usefulness of rubrics from the perspective of students, drawing motivation from two recent studies – the study by Andrade and Du (2005), which examined the usage of rubrics by students to support their own learning and academic performance and the study by Petkov and Petkova (2006), which explored the possibility of developing curriculum wide rubrics at post-graduate level. This study intends to investigate the contribution of rubrics referenced feedback towards enhancement of motivation, development of self- regulation characteristics and improvement in academic performance. It seeks to achieve this by assessing student-learning outcomes in multiple courses of general Masters in Business Administration (MBA) program in two or more business schools in Hyderabad including, ICFAI Business School, Hyderabad.*

Introduction

The quality of business programs in educational institutions has traditionally been assessed by using input, process and output measures. Input measures review resources such as students, faculty, infrastructure and financial stability as these are considered essential for conduct of academic activities. Process measures assess the delivery and use of institutional services in terms of class sizes, student to faculty ratios, teaching methods etc. Along with these, output measures such as salary levels of graduates, placement and graduation rates, intellectual contributions by faculty and the like, reflect what an institution has achieved as a result of inputs applied. The emphasis of program assessment is currently on outcomes measures, which unlike output measures, scrutinize a program from the perspective of the measurable advances the program makes in developing competencies in students. In other words, outcomes measures reveal 'what individual students learn' (Apostolou, 1999; Dugan and Hernon, 2002; Shavelson and Huang, 2003; Black and Duhon, 2003).

The 'Outcomes-based education' approach, is built on the principles of: (a) clearly defining and announcing what learners would know, along with what they would be able to do at the completion of the program; developing curriculum and instruction to enable the learners to accomplish the same (outcomes based instruction); (b) assessing and documenting the achievement of learning; using the information to guide curriculum and instruction (outcomes based assessment).

In the outcomes based approach, the focus is on Student Learning (SL), but there is no consensus in the literature on how SL can be measured. Broadly, there are limitations in the use of methods that are often employed to assess SL. While indirect methods such as surveys, interviews and focus groups provide 'proxy' information about SL (Petcov and Petcova, 2006), the direct method, namely, stand alone standardized field testing instrument, which are administered at the conclusion of the program has been criticized for its inability to measure 'incremental learning' (Oakleaf, 2006; Ross *et al,* 2006; Seeratan, 2006).

The growing emphasis on course-embedded measurement provides the rationale for developing direct measures which would serve as evidence of incremental SL and hence as a measure of effectiveness of a program (Michlitsh and Sidle, 2002; Dwyer *et al,* 2006; Ross *et al,* 2006; Klenowski, 1996; Seeratan, 2006). The use of rubrics is one such approach (Powell 2001, Schafer *et al,* 2001; Martell and Calderon, 2006; Petcov and Petcova, 2006; Andrade and Du, 2005; Glickman-Bond and Rose, 2006; Popham, 1997).

Rubrics are guidelines that enable the assessment process of 'communicating expectations; providing focused ongoing feedback; and grading' (Andrade & Du, 2005; Moskal, 2000; Isaacs, 2001; Holmes and Smith, 2003). A 'rubric' is defined as a "document that articulates the expectations for an assignment by listing the criteria, or what counts, and describing levels of quality from excellent to poor" (Andrade and Du, 2005, p 1). Apart from being considered as an 'effective' tool for measuring, evaluating and reporting student achievement, rubrics are also 'designed' to guide students' learning, teachers' instruction, course development and administrators' program observations (Glickman-Bond and Rose, 2006). Rubrics therefore are held as being direct assessment measures which help to answer the key questions driving outcomes assessment, i.e. "how students learn; what students learn; how is student learning assessed; and how are assessment results used" (Glenn, 2005, p 1).

Assessment of SL using rubrics is a change process, requiring considerable faculty involvement in terms of both time and effort. Investigation of its usefulness to the primary stakeholders in an educational institution, namely faculty and students, is therefore an immediate necessity.

Literature Review

Rubrics

Rubrics are assessment tools, which facilitate the process of evaluation and reporting of student achievement by educators. They are 'descriptive scoring schemes', 'a set of scoring guidelines' and get their importance as a direct result of the emphasis on usage of constructed responses and performance based tasks in business programs (Hafner and Hafner, 2003; Quinlan, 2006; Glickman-Bond and Rose, 2006). A means of 'communicating expectations; providing focused ongoing feedback; and grading' (Andrade and Du, 2005, Moskal, 2000; Isaacs, 2001; Holmes and Smith, 2003) rubrics are aligned with outcomes based approach to education. They can be used across a broad range of subjects (Moskal, 2000; Tierney and Simon, 2004) and have three essential features namely, Evaluation Criteria, Quality Definitions and Scoring Strategy (Popham, 1997):

a) *Evaluation criteria* are the factors that an assessor considers when determining the quality of a student's work. "They are the conditions a performance must meet to be successful" (Wiggins, 1998 in Oakleaf, 2006, p 187). Other authors define criteria as a set of indicators / guides / list of measures / qualities required for a student to meet an outcome. Listing of criteria enables the 'conceptualization and definition of standards, especially in hard-to-define areas such as critical thinking, problem solving, team skill etc'. It provides for 'criterion-referenced discrimination of performances' and enables monitoring of students learning against each criteria.

b) *Quality Definitions* provide a detailed explanation of what a student must do to demonstrate a skill / proficiency / criteria in order to attain a particular level of achievement/ performance (for example poor, fair, good, excellent). The importance of these 'levels of mastery', 'performance descriptors' and 'target indicators' stem from their ability to "address concerns such as how to tell a good response from a poor one; how to be consistent in judging student performance across assignments, students, and time; how to define success; and how to capture student performance in a way to report this to parents" (Arter, 1996 as quoted by Oakleaf 2006, p 188).

c) *Scoring Strategy* of rubrics could be for scoring a product or process in its entirety, i.e. holistic. Given its approach of overall evaluation, holistic rubrics do not provide detailed and diagnostic feedback of the strengths and weakness of the product/ performance (Mertler, 2001; Moskal, 2000). Scoring strategy could also be for scoring each criterion separately for eventual aggregation to form an overall score, i.e. analytic. Analytic rubrics have a part-to-whole; criterion-by-criterion judgment approach which makes multidimensional assessment possible. The literature on rubrics state that the detailed feedback provided by these, are useful for guiding the improvement of SL at an aggregate as well as at an individual student level (Klenowski, 1996; Simon and Forgette-Giroux, 2001). Apart from feedback to the students, the information so gathered is believed to serve as 'instructional illuminators', facilitating the process of planning of instruction as well as improvement of course design (Popham, 1997; Petcov and Petcova, 2006).

Development of rubrics, holistic or analytic, can be for each individual task/event/assignment separately, i.e. task specific, or could be for use across similar tasks / events/performances i.e. generic. Although task specific rubrics have been stated in literature to have higher reliability and validity, their necessity and feasibility (due to the investment of time and energy) has been questioned (Moskal, 2000; Popham, 1997). Generic rubrics, on the other hand capture the essential ingredients of the 'skill to be measured' and not the 'skill as applied to a specific task' (Popham, 1997; Oakleaf, 2006). Their flexibility permits usage for assessment of tasks, programs and student learning across time and programs (Tierney and Simon, 2004; Oakleaf, 2006; Petcov and Petcova, 2006).

Studies on Effectiveness of Rubrics

That rubrics play important roles beyond grading has been asserted by several studies. Rubrics, with their fundamental characteristics of stating agreed upon values together with providing detailed result data are believed to contribute towards improved learning. Used widely in the USA at school level, they are increasingly being accepted in higher education as well (Simon and Forgette-Giroux, 2001). This is essentially due to the dissatisfaction, as expressed by teachers and students alike with grading methods of constructed-response items (such as essays, case analysis) and performance-based tasks (such as oral presentations, projects). Several studies were undertaken on the grading system from the students' perspective (Oakleaf, 2006; Powell, 2001; Andrade and Du, 2005). One study that specifically examined grading systems in a business program is that by Holmes and Smith (2003). Using a survey method, this study probed the aspects that the students perceived as 'specifically irritating' regarding faculty grading of essays and quantitative problems. The survey instrument administered to 230 students, collected views on grading of essays from students attending courses in marketing and the views on grading of quantitative problems from those attending courses in accounting. The authors reported that irrespective of the assessment method, essays or quantitative problems, student criticisms of grading broadly fell under the two categories of (a) lack of fairness, and (b) inadequate feedback. Apart from finding theoretical support (Isaacs, 2001; Phillip, 2002), these findings are not very different from similar studies done in other academic programs (Oakleaf, 2006; Powell, 2001).

A few studies have also examined grading systems from the teachers' perspective. For instance, Michlitch and Sidle (2002), conducted a survey-based study to identify the assessment methods used by teachers (*N* = 50) in two US based business schools teachers and their level of satisfaction with the same. The results showed that tests/ exams; individual/ group assignments; case studies / problems assignments; observation of student group process in resolving case studies / problems were rated high terms of both frequency and effectiveness. A mismatch between frequency of usage and perceived effectiveness of assessment methods was detected for the methods of "analytic scoring of student writing assignments to break down each skill area" and "observation of student presentations measuring performance, using criterion". According to the authors, the teachers believed that the use of these methods would lead to 'greatly enhanced' SL and emphasized upon the requirement for 'effective' tools to guide assessment of student performances when using these methods.

The study by Schafer *et al* (2001) was motivated by the speculations made in literature that a teacher's better understanding of what was expected from students, would lead to the design of effective instructional experiences. That such teachers would be able to more effectively monitor student progress; provide formative feedback and encourage students to participate in ongoing evaluation of their own work (self-monitoring of achievement) are the other presuppositions by previous researcher. The authors however limited the scope of their study to test the contribution of enhanced teacher knowledge of rubrics on improvement in student achievement. Pairs of teachers were selected from different schools based on the courses taught (algebra, biology, English, and government) as well as on the ability level of students taught. Teams of four to six teachers and content specialists from different schools brainstormed the criteria for development of rubrics that would be appropriate for the assessments. Generic analytic scoring rubrics (0 to 4 points) in each of the content areas were developed, which were to be used for scoring student Constructed-response (CR). One member of each pair of teachers was selected randomly and assigned to receive rubric training for two days. After a period of instruction, all teachers were asked to administer three tests in each of the four content areas. The tests which were blind scored by two independent readers, contained both selected-response and constructed-response items. The method of treating difference in inter-rater scores used by the authors was to average the scores assigned by the two readers. Results favoured the achievement of students whose teachers had received rubric training in three of the eight (two item types in each of four content areas) comparisons; the other five comparisons were not significant. The significant results were in algebra for both item types and in biology for CR items.

Reflecting upon the results, the authors speculate that significant positive results in other content areas could have been achieved through improved rubrics and/ or rubric training. The study makes an inroad for further research on how the different items in an assessment task, namely selected-response and constructed-response, could be used to inform instruction. While the authors do not delve into aspects of student learning beyond academic performance, they emphasize upon two areas of research as important in future, namely, effect of rubrics on student behaviour and the potential of these behaviours to lead to improvements in academic achievement.

While Schafer *et al* (2001) developed generic analytic scoring rubrics for each of the subjects, an attempt to develop scoring rubrics that can be used in different subjects across one program was made by Petkov and Petkova (2006). The authors provide an approach to designing rubrics for an assessment method that is used across diverse courses in an Information Systems (IS) program. While noting that classroom assessment for every course in a program is the preference of individual instructors, the authors provide evidence that agreement on criteria and levels of quality can be attained. The authors used the schemes for evaluation of projects as suggested by previous researchers to develop rubrics for projects in different disciplines. These schemes included criteria such as Planning,

Execution, Originality of the design, Use of resources, Critical review or self assessment, Personal contribution, Comprehension of concepts and aims, Motivation/ application, Appropriateness of methods and/or experimental design, Organizational skills, Competence and Independence, Presentation, Leadership, Team building and so on. The authors used all these criteria along with the guidelines provided by Mertler (2001) to develop their generic project rubrics. The steps followed were to (a) define the goals of the assessment method, i.e. project; (b) define criteria; (c) define performance levels.

The criteria to be used for defining projects in each of the courses namely Management of Business Information; Systems Analysis and Design; Database Design and Security; and Information System Strategy were refined and changes in orientation as required were made in the rubric. Each course therefore had a project rubric with minor differences in the criteria to reflect the content and goals better. To illustrate the commonality as well as differences in the rubrics created for the same assessment method in different subjects, the authors provide the rubrics created for two of the subjects.

An exploratory field research was conducted by the authors to study and illustrate the impact of using rubrics for project assessment in the subject of Management of Business Information. The experiment involved assigning a similar type of project to two sections with twenty students each. The treatment consisted of providing only one of the groups with the project assessment rubric at the beginning of the semester. Each of the sections was divided into eight project groups and the mean percentage grade achieved by the sections was compared. The null hypothesis that the mean percentage grade for the group not using rubrics would be higher than the mean for the group that was using rubrics, was rejected based on one tail t-test at 0.05 level of confidence.

While results from a larger sample size would be needed to support the finding, the usefulness of a short-term rubrics intervention in attaining higher levels of performance is illustrated by the paper. In addition, the authors' approach of developing a generic scoring rubric for use across courses lays the foundation for long-term assessment of student learning by enabling comparability, not only across courses but also across semesters. How the information so gained would lend itself for use in improvement of program effectiveness is an area for empirical research. The authors suggest that the rubrics developed by them allow a standardization in assessment and uniformity in evaluation of projects across most subjects in an IS program. While the study illustrated the positive impact of the use of rubrics on student achievement in one task, they suggest the development of generic scoring rubrics for different assessment tasks for implementation at a program level. The authors believe that a comparison at course level and across courses of 'the average rating for all team projects along each criterion may serve as an indication for potential problem areas that need to be addressed by the instructor'. Along with improvement in instruction, whether the results could be used for mapping and improving SL are areas for future research.

Student Learning

The multi-dimensionality of student learning requires the use of different methods and tools for assessment of each of the dimensions (Dwyer *et al,* 2006; Seeratan, 2006). In consonance with previous researchers, Dwyer *et al* (2006) classify the dimensions of student learning as:
- *Workforce Readiness and General Education Skills* (a set of skills required for academic and professional performance such as verbal reasoning, quantitative reasoning, critical thinking and problem solving, oral and written communication skills)
- *Domain Specific Knowledge* (a set of knowledge needed to be considered competent in that domain)
- *Soft Skills* (a set of non-cognitive skills and traits such as creativity and teamwork)

They add *Student Engagement* as the fourth dimension, wherein they describe it as the nature and extent to which students actively engage in their own learning. It is a cognitive strategy (Klenowski, 1996) and recognized as an important constituent of the constructivist and adult learning theories.

Learning is defined as 'the changes in knowledge, understanding, skills and attitudes' brought about by experience and reflection upon that experience. Feedback acts as a catalyst in accelerating experience as well as reflection, which is a form of internal feedback (Brown *et al,* 1999). Proponents of assessment reform such as Wiggins (1991) suggest the increased usage of 'self assessment', which is a part of self-regulated learning strategies. This is due to the emphasis of self-assessment on making students self-reliant (Klenowski, 1996; Ross *et al,* 2006).

Defined as a process of 'evaluation or judgment of the worth of one's performance and the identification of one's strength and weaknesses with a view to improving one's outcomes' (Klenowski, 1996, p 1), self-assessment embodies three processes. These are, 'self-observation' i.e. focus on aspects performance in relation to the standards specified; 'self-judgment' i.e. determining how well they have met the specified learning goals; and 'self-reactions' i.e. interpretations of the degree of goal achievement that express how satisfied students are with the result of their actions (Ross, 2006).

That development of self-assessment is inseparable from any assessment aimed at improving learning is asserted by Wiggins (1991) who advocates the use of explicit criteria to enable students to self assess. It is in this light that rubrics are being stated as a mainstay of outcomes-based assessment (Popham, 1997; Holmes and Smith, 2003; Andrade & Du, 2005; Oakleaf, 2006) and therefore merits increased attention from educators and researchers. The proposition that rubrics would lead to development of self-assessment has received theoretical support, and is increasingly being cited as a promising area for empirical research (Petcov and Petcova, 2006; Suskie, 2004; Andrade and Du, 2005).

Self- assessment is a part of self-regulated learning strategies and the current literature on educational psychology considers 'self-regulated' learning as an important perspective on academic learning (Pintrich, 1999). Self-regulation is "the ability to monitor and control one's learning, usually involves some type of monitoring of cognitive processes and is affected by the degree of motivation, social contexts, learning contexts and self-efficacy factors" (Brooks, 2006, p 11). Literature on self-regulated learning is extensive and recognizes metacognitive strategies and motivation to have a positive influence on academic achievement (Suskie, 2004; Pintrich, 1999; Brooks, 2006). Metacognition is "learning how to learn and how to manage one's own learning by understanding how one learns" (Suskie, 2004, p 85). Most models of metacognitive strategies include three general types of strategies namely Planning (goal setting); Monitoring (comparison of performance with goals set); and Regulating (corrective action). Of the models of motivation, which are considered relevant to student learning, self-efficacy beliefs are associated with the constructivist and adult learning theories (Pintrich, 1999; Brooks, 2006). Self-efficacy is defined as judgments of one's capabilities to perform academic tasks. Research on motivation and self-regulated learning suggests that change in classroom practices facilitate learning (Suskie, 2004; Pintrich, 1999; Brooks, 2006).

Development of Self-regulated thinking according to the 'Dimensions of Student Learning' framework enables students to monitor their own thinking; plan appropriately; identify and use necessary resources; respond appropriately to feedback; and evaluate the effectiveness of their actions. According to Andrade and Du (2005), when used as part of a formative, student-centred approach to assessment, rubrics have the potential to enable students to understand the requirements and improve the performance on their own. Rubrics support the metacognitive strategies of planning, monitoring and regulating. While the assertion that rubrics brings about active engagement by students in their own assessment has 'face

validity and enormous appeal' it is yet to be empirically established. The study by Andrade and Du (2005) provides some evidence of how students perceive and use rubrics for self-assessment. The authors report the findings of topical interviews in focus groups participated by fourteen undergraduate teacher education students. The students who had undergone a course in educational psychology had experienced rubrics in the form of co-creating rubrics in class; using it for rubric-referenced self-assessment and for giving teacher feedback. Insights were drawn from the discussions in the group on ways in which students had used rubrics 'to plan an approach to an assignment, check their work, and guide or reflect on feedback from others'. The data from the interviews was coded and analyzed using a Consensual Qualitative Research (CQR) methodology, where in a team of researchers look into the data at an individual level and then discuss in a group to reach a consensus.

The authors report consistently positive students' comments regarding use of rubrics for assessment and self-assessment. Apart from providing direction for performance, the students appreciated the detailed feedback and fair transparent grading. They emphasized that using rubrics 'helped them focus their efforts, produce work of higher quality, earn a better grade, and feel less anxious about an assignment'. In addition, students used rubrics to 'plan an approach to an assignment, check their work, and guide or reflect on feedback from others'. This as stated by the authors is consistent with the aspects of 'academic learning behaviour such as goal-setting, self- assessment and revision'. Some comments from students however revealed a tendency to read only a part of the rubrics and to use the guidelines to help satisfy the expectations of a particular teacher. Though the findings support the formative, student-centred classroom assessment, the size of the sample and the exploratory nature of the study do not permit generalization. In addition, the findings are based on self-report study, and do not provide any empirical evidence to substantiate the extent of impact on learning claimed by the participants. The study is important as apart from making the first attempt of delving into the impact of rubrics on student learning behaviours, it highlights several potential areas of research such as

a) Rubrics leading to the development of an attitude in students to 'give what teachers expect'
b) Rubrics leading to the development of learning behaviours such as monitoring performance; reflecting on feedback; assessing and revising performance
c) Transferability of knowledge gained of rubrics in one course to another
d) Stated versus actual reading of all the performance levels detailed in the rubric.

Rubrics support constructivist theories of learning, which emphasize upon students and teachers to look to assessment as a source of continuous feedback for improvement of learning process rather than as an evaluative process. The linkage between rubrics, assessment and learning, is captured in the statement "Learning theory supports the idea that we retain the most when we are actively involving all of our senses in a doing mode. By creating, sharing, and accomplishing the criteria set by a rubric, the student is in charge of his or her own learning and assessment" (Phillip, 2002, p 26).
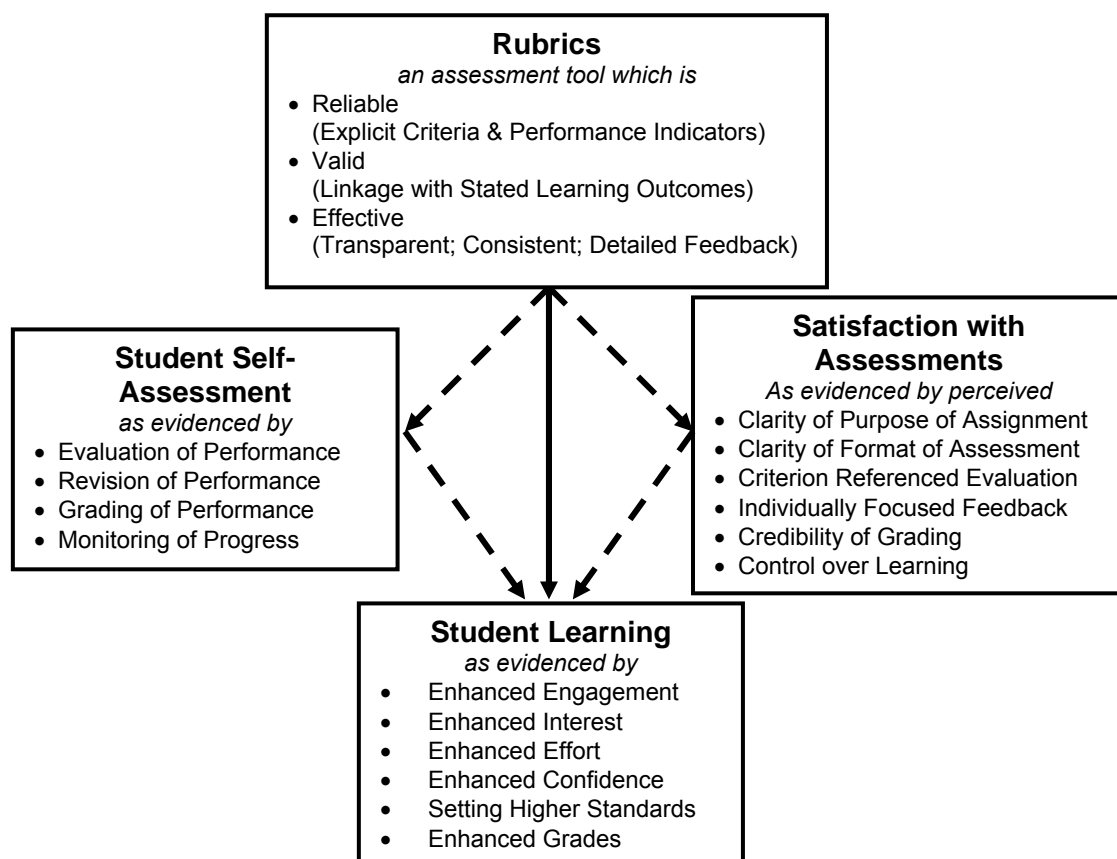
Gaps in Literature and Research Questions

Although rubrics have received theoretical support as important measures for assessing and improving SL, there is dearth of empirical work establishing the same. Studies on rubrics, a direct measure of student learning are far outnumbered by those using indirect measures such as surveys and questionnaires. The few that exist have examined the utility of rubrics in only one dimension of outcomes based assessment, namely 'documenting' the achievement of learning. Moreover the available studies have considered higher achievement levels in either one task in one course (Shepard, 2005; Holmes and Smith, 2003) or one task in diverse courses (Petkov and Petkova, 2006; Powell, 2001; Simon and Forgette-Giroux, 2001). Though several researchers strongly support course wise and program wide

implementation (Powell, 2001; Wiggins, 1991; Schafer *et al,* 2001; Petkov and Petkova, 2006) it is not represented in the studies available to the researcher. The dimension of how the use of rubrics influences student attitudes and self-regulation behaviours has also not received sufficient attention by previous researchers.

In the context of business programs, the existing publications in the area of assessment have essentially concentrated on the 'assessment for accountability' (Hindi and Miller, 2000; Hopkins and Duke, 2004; Glenn, 2005) taken up for demonstrating student learning to external stakeholders. The focus of research has been on the impact of standardized tests and their effectiveness as predictors of academic success (Bagamery *et al,* 2005, Yang and Lu, 2001; Black and Duhon, 2003). Literature on learning outcomes and student learning assessment identifies rubrics as a promising measure, which can contribute towards enhancement of SL. There is therefore a need to explore and establish the value of rubrics. While there is evidence of growing use of rubrics in practice by various educators in business programs, there is paucity of published research on it. It is in this context that this study seeks to assess SL in a business program using the rubrics approach.

Drawing upon the existing literature, the proposed research intends to delve into the aspects of performance tasks, constructed response, rubrics, self-regulation, and SL. Literature reiterates that development of valid and reliable rubrics provides consistent, transparent and detailed feedback to students. Based on existing literature, the study conceptualizes that use of rubrics for providing clear and individually focused diagnostic feedback would not only bring about satisfaction with assessments but also facilitate the process of self-assessment in students. The components of self-assessment, namely evaluation, revision and grading of performance along with monitoring their own progress when combined with increased satisfaction with assessments should influence student learning favourably. Apart from enhanced grades the other aspects of student learning such as motivation, self-efficacy and self- regulation of learning would get enhanced. The conceptual model is shown below:

The study seeks to examine the potential role of rubrics in fostering self-regulated learning strategies (Masui and Corte, 2005; Brooks, 2006; Andrade and Du, 2005) as well as in enhancing satisfaction with assessments, enhancing motivation and improving academics performance. For this purpose, the study will be conducted in multiple courses of general MBA program offered at two or three business schools including ICFAI Business School (IBS), Hyderabad. The study will use a two-group, pre-test/post-test experimental design. Generic analytic scoring rubrics would be developed and in the format of a field experiment, the intervention would be integrated into the courses.

The specific research questions that this study asks are:
1. Does the intervention improve satisfaction with regard to quality of feedback and fairness of grading?
2. Does the intervention enhance motivation and self-regulated learning behaviour?
3. Does the intervention improve academic performance?

Methodology

Research Design

Experimental research designs are widely used in educational research (Mohr, 1990; Campbell and Stanley, 1963; Angrist, 2003; Masui and Corte, 2005; Schafer, 2001). The field study would be carried out at IBS and one or two other business schools.

The manner of assignment of students of the business schools into different sections would determine if the design would be a true or quasi-experimental design. Two groups would be chosen at random at each of the schools for each of the courses. Since both the groups would be exposed to the same instructor as well as social and study environment, except for mortality and social interaction, the internal threats to validity such as history, instrumentation, statistical regression and testing are expected to be controlled. Also, conducting a pre-test at the beginning of the course followed by a test on domain knowledge after equal number of weeks of instruction in both the groups would help in assessing difference in groups.

Procedures

The rubrics intervention would be applied in the natural context of instruction in the business school for a period of one semester (approximately 16 weeks). Generic analytic scoring rubrics would be developed for each those assessment methods to be used by the instructor. The study would be conducted in the following stages:

Stage I: Development of Rubrics

The rubrics would be developed by following the multi-step approach as proposed by Lopez (1999), Philip (2002), Martell and Calderon (2006), Tierney and Simon (2004).

The development of rubrics requires gathering information about the opinions and practices of individual faculty members (an expert, a representative member of a group of faculty members). The insights gained at an individual level are then compared and consolidated to formulate the understanding at a group level.

To identify learning goals and objectives for the course, the researcher would have discussions with a diverse set of faculty members teaching at IBS. Several rounds of group meetings would be conducted with the faculty members to:

- Define the learning objectives of the course.
- Decide upon the assessment methods that would be employed to assess the achievement of the learning goals of the course.
- Describe the criteria and levels of performance for the assessment method as would be applicable in the course.

The rationale behind the procedure is to bring together the views of a group of interested colleagues in the school to 'build upon their common knowledge of the subjects involved'. This has a greater impact than any one individual may have upon definition of learning goals and expectations, course design and course delivery (Brown *et al,* 1997; Suskie, 2004). Apart from this, input for developing the generic analytic scoring rubrics would be taken from faculty members from other business schools and State standard rubrics as available in the state education department websites of several states of USA.

The rubrics so developed would be tested for appropriateness by determining if the rubric(s) measure "what it is intended to measure" (validity) and if it provides consistency in scoring (reliability). Validity of the rubrics developed will be addressed by reflecting on the purpose and objectives of the assessment as suggested by Moskal (2003), Mertler (2001) and using the framework given by Moskal and Leydens (2000). The study proposes to establish validity based on the match between course objectives, purpose of the assignment method and objective of the assignment task. This form of validity has been labelled as 'appropriateness' (Brown *et al,* 1997, Moskal and Leydens, 2000). The rubric would also be sent some faculty members outside the school for rating the same on parameters such as Clarity, Completeness and Generalized Applicability.

Reliability that is considered in classroom assessment and in rubric development involves rater reliability (Moskal and Leyden, 2000). Rater reliability generally refers to the consistency of scores that are assigned by two independent raters (inter-rater reliability) and that are assigned by the same rater at different points in time (intra-rater reliability). There is ample evidence of disagreement between assessors even with using marking schemes such as rubrics (Johnson *et al,* 2000; Shepard, 2005; Simon and Forgette-Giroux, 2001; Schafer, 2001; Oakleaf, 2006). It is suggested that a careful attention to training the users on criteria can minimize sources of error (Brown *et al,* 1997). This however, is beyond the purview of the proposed research.

Research on assessment of student learning suggests the higher importance of internal consistency of a marker as a reflection of fairness of marks awarded (Brown *et al,* 1997; Cambell and Stanley, 1963; Moskal and Leydens, 2000; Schafer, 2000; Stemler, 2004; Glenn, 2005). A well-designed scoring rubric addresses the concern of inconsistencies in the scoring process, which result from influences that are internal to the rater. A 'stability reliability' approach would be used to establish Intra-rater reliability (Cambell and Stanley, 1963; Moskal and Leydens, 2000; Schafer, 2000; Glenn, 2005). Also known as, test-retest, the study proposes to use this method where in the same set of assignments would be given to an individual faculty member twice, separated by two weeks. The correlation between scores at time 1 and time 2 will be used as a measure of intra-rater reliability. The rubrics would then be pilot tested with students to refine the rubrics in terms of clarity of descriptions and language used.

Stage II: Intervention

The procedure for the experiment is illustrated below:

	Pre-test		Intervention	Post-test 1	Intervention	Post-test 2
Experimental Group	O_{A1}	Test	X_1, X_2, X_3	O_{A2}, O_{B1}	X_4, X_5, X_6	O_{A3}, O_{B2}
Control Group	O_{A1}	Test		O_{A2}, O_{B1}	X_4, X_5, X_6	O_{A3}, O_{B2}
Time	1st week	3rd week	3rd -8th week	9th week	10th –14th week	15th week

O_A: Motivation Strategies for Learning Questionnaire
X : Rubrics Interventions
O_B : Grading Attitude Survey

Stage III: Data Collection and Data Analysis

Data on motivation and self-regulated learning strategies would be collected using the standardized instruments, namely, Motivated Strategies for Learning Questionnaire (MSLQ). The instrument was developed by Pintrich, Smith, Garcia and McKeachie (1991) "to evaluate self-regulated learning. It has been used widely in investigating students' motivation and learning strategies in several countries including Arabia, Australia, Canada, China, Japan and Taiwan. In the United States, the MSLQ has been used by educational researchers to study motivation and performance; motivation, learning strategies and achievement; self-regulated learners and web-based learning." (Brooks, 2006, p 51). The instrument measures two main areas: motivation and learning strategies. The assessment is a self-report measurement consisting of 81 statements, each answered according to a Liker scale 1 (not at all true of me) – 7 (very true of me). The subcomponents of the instrument match with the variables of interest in the study.

Data on student satisfaction with assessments would be collected using an adapted version of Grading Attitude Survey (GAS) developed by Parkes (2006). It consists of a self-report measurement procedure consisting of 20 statements, each answered using a Likert scale of strongly agree to strongly disagree. The following presents the plan for data collection and data analysis

Hypothesis	Measurement
Hypothesis 1: The satisfaction levels with regard to quality of feedback and fairness of grading would be higher in the experimental group.	Adapted version of GAS: Pretest 2 scores between control and experimental group
Hypothesis 2: The levels of motivation and self-regulated learning would be higher in the experimental group.	MSLQ: Pretest 2 scores between control and experimental group
Hypothesis 3: The academic performance would be higher in the experimental group.	Overall scores attained in the assessment tasks: Prior to Pretest 2
Hypothesis 4: The after intervention levels of satisfaction with grading; motivation and self-regulated learning will be higher than the levels prior to intervention.	MSLQ, GAS, Overall scores attained: Pretest 2 and Post test scores within the control group
Hypothesis 5: The overall levels of satisfaction with grading; motivation and self-regulated learning; and academic performance will be higher in the group experiencing the intervention for a longer period.	MSLQ, GAS, Overall scores attained: Post test scores between control and experimental group

Data would be analyzed using two-sample t-test, both within-subjects and between-subjects versions. Effect size would be calculated. If the groups are found to be non-equivalent in the pre-test, then repeated measures would be used for data analyses. Qualitative inquiry would also be conducted to gain further insight into the results obtained.

Expected Contribution

The study probes into some of the claims made in the literature regarding the effectiveness of rubrics for enhancing student learning. By doing so, it would enhance understanding of how rubrics can support student-learning processes. The study would provide the much-needed evidence about the usefulness of rubrics as an assessment tool for improving student learning in the dimensions of attitudes, perceptions and behaviours that affect students' ability to learn. It would empirically test if rubrics assisted feedback and assessment processes enhance achievement levels; develop positive perceptions about grading; increase motivation; and enhance self-regulated learning behaviour. The limited empirical studies in rubrics have not paid attention to exploring all these dimensions of student learning, especially in multiple tasks in one course format. Moreover, there are no studies on rubrics and its effect on SL in the Indian context. An investigation into this area would be of relevance to the higher education institutions in general and would contribute to the growing literature in rubrics research for assessment of student learning.

It has practical application, in that the small- scale assessment project has the potential to be extended later into implementation of a full assessment plan in a school. Moreover, the research design lends itself to replication in other contexts to test for generalization of results.

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