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# Effectiveness of Criterion-Referenced Testing in Assessing Creativity within Omani Graphic Design Education

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## Abstract

**Objective:** The present study aimed to evaluate the ‘Effectiveness of Criterion-Referenced Testing in Assessing Creativity within Omani Graphic Design Education’. The element of creativity has gained increased attention in the field of education over the past decade. The discipline of graphic design is quite vast and requires students to have creative and problem-solving abilities. **Method:** In order to adequately understand the effectiveness of criterion-referenced testing in the field of graphic design, a thorough review of the literature was conducted. A qualitative approach was used i.e. survey and interview to explore the effectiveness of Criterion-Referenced Testing in the Assessment of Creativity among Oman’s Graphic Design Education. **Results:** The present investigation has thoroughly discussed the contemporary scenario of Oman’s education system, the present state of graphic design education in the country and the instructor’s emphasis on the use of Criterion-Referenced Testing. **Conclusion:** Creativity is regarded as a ‘problem solving’ process in design education. The results of the study clearly indicate that Criterion Referenced Testing is an adequate measure for Oman’s graphic design students. The analysis also revealed that creativity is a subjective matter, and its relevance and definition varies from subject to subject.

**Keywords:** Assessment, creativity, creativity enhancement, design, graphic design education

## **Introduction**

The effectiveness of criterion-referenced testing in the assessment of creativity has not been studied in the context of Omani graphic design education. In a broader perspective, creativity is a quite complex phenomenon. Creativity is an element which is above “the material properties and personal prospects of an individual” (Williams, Ostwald, and Askland, 2010). It is believed that, in order to intersect with different areas of expertise and knowledge; creativity plays a major role in the disciplines of psychology, art, education, cultural studies, and sociology. Hence, a mutually agreed definition of creativity does not exist. People attempt to define creativity in the context of the discussion (ibid, 2010). A basic definition of creativity which applies to different fields is “a production of appropriate and novel ideas under the realm of science and human activity”. The central effort to the unravel minds is explaining and exploring creativity by observing the creative outputs of individuals (Carter, 2015). As a consequence, the idea of ‘creativity’ is quite contested and is regarded as a “divisive topic” (Williams, Ostwald, and Askland, 2010). All in all, it can be ascertained that a ‘one size fits all’ idea of creativity is rarely agreed by anyone.

## **Overview of the Study**

The research problem at hand could be formulated as the assessment of creativity with criterion-referenced testing in the context of graphic design education. Analysis revealed that education has not been researched properly in the context of Oman. Hence, Omani education system lacks a well-defined framework for an assessment of creativity. A major consequence of the shortage could be attributed to the lack of pedagogical models for creativity enhancement among students. It is also believed that the problem lies in a continuous underestimation of creativity in the field of graphic design. There is a need for creative workforce in order to respond to the uncertain and complex times (Wood & Bilsborow, 2015).

The present research has conducted a detailed analysis on the effectiveness of criterion-referenced testing for the assessment of creativity among students. The educational issue within the Omani (Arabic) context continues to impact advancements in the fields of Liberal Arts and Education. Due to the absence of unified conceptions on creativity, Barnard (2005) asserted that “Educators continue to operate on an unexamined idea of creativity and are likely to remain critical on exploring its different facets.”

## ***Assessing creativity by criterion-referenced testing***

The use of Criterion-referenced testing has been encouraged by some educators (Lai, 2007; Harpe and Peterson, 2008). They regard testing as a thorough and practical assessment, aimed at

improving the outcomes in the field of Design and Art. Harpe and Peterson (2008) argued, that “It is widely believed, that a good assessment tends to be holistic and incorporates the essential capability tests of the student.” This perspective can be applied to the assessment of creativity among Omani students. Such tests allow teachers to improve their modes of instruction and to solve design problems in a decent manner.

It should be realized; that certain issues are associated with the use of criterion-referenced tests. "In the field of Design and Art Education, the demand for an assessable product have increased" (Dineen and Collins, 2004). This has led to a number of issues in conducting research because most assessments fail to ignore the vitality of 'creative processes'. Most tests focus on the final outcomes and hence, tend to induce a response based approach among researchers. Creativity is a vital component in the field of education and hence, a comprehensive approach should be followed to study it as a problem-solving process. The issue can be overcome by the addition of different components in criterion-referenced tests that aim to assess creativity (Mason, 2007). Most instructors tend to be ill-equipped in handling criterion referenced assessments. Similarly, instructors experience difficulties in using written grade descriptions for the assessment of visual clues and imagery.

A dialogue between instructors and students should be encouraged. Also, that improvement can be brought in the grading systems. The availability of visual materials in criterion referenced testing does not serve as a decent substitute in real life scenarios. Creativity is being considered as a 'problem solving' feature in the present research. It continues to serve as a pre-requisite in the assessment of graphic design students. In the application of criterion-referenced testing, "the purpose is not to identify and distinguish students on the basis of their characteristics, but to identify the differences in their performance by conducting comparisons between them" (Biggs and Tang, 2007; cited in Harpe and Peterson, 2008). In creative subjects, the process entails a decent assessment criterion i.e. in the fields of Art/Design. Such an understanding is quite compatible with the notion of regarding creativity as a problem-solving skill in the field of education.

### ***Purpose of the Study***

The purpose of the present study is to explore the “Effectiveness of Criterion-Referenced Testing in Assessing Creativity within Omani Graphic Design Education”. Criterion-referenced testing is regarded as an effective method to measure certain stimuli in the fields of psychology, sociology and education. However, use of criterion-referenced testing has not been studied in the assessment of creativity. In order to adequately explore the concept of 'creativity' using a criterion referenced testing model in the field of graphic design; it is vital to develop a thorough understanding of different facets of creativity. The field of graphic design is quite vast and consistently requires

students to make use of their creative abilities. The students must trust on their own intelligence and take responsibilities of their own learning. Creativity is a function which is conceived differently in all societies (Barnard, 2005). Hence, in the field of graphic design, creativity refers to an individual's problem-solving abilities. Creativity can enhance the efforts of an individual and allow him to work efficiently and smartly (Duke & Suter, 2016). The following are the aims of the present study:

- To explore the effectiveness of Criterion Referenced Testing in the context of Omani Graphic Design Education.
- To investigate the Assessment of Creativity between Arabic and Western Cultures.
- To highlight the prevalent issues in Omani Graphic Design Education and its impact on Student Creativity.

#### *Research Question*

The following is the proposed research question of the study:

- What is the Relevance of Criterion-Referenced Testing in the Assessment of Creativity among Omani Students?

## **Literature Review**

### ***Contemporary Graphic Design Education in Oman***

Creativity is considered as a vital feature in design curriculum throughout the developed world. However, in most Middle-Eastern countries, creativity has long been disregarded. There is a lack of teachers' motivation for students to build-up more creativity in their work (Heller, 2015). Perhaps, this problem stems out of the missing role of creative minds in a cultural and social change in Arabic educational institutions. Such an orthodox learning environment is not suited to the study of graphic design education. Omani students acquire education in an environment, where being creative is regarded as risky and exploration of new ideas is discouraged. On the other hand, parents are interested in promoting the creative knowledge to their children. "Orthodox educational system" restricts the students from expressing themselves and utilizing their true potential. Many Omani students have been found interested in the creative designing and working creatively. They might require a creative environment to promote their abilities. (Alhajri, 2015).

### ***Theories of studying Creativity***

Creativity is one of those topics that are very well researched, but at the same time; it is the topic that is still not fully defined and remains an uncertain phenomenon. There is no such method developed that can study the creativity. There is no such agreement formed which provides an evidence of the presence of creativity in an individual or a product. However, it is an agreed phenomenon that creativity tends to be priceless and narrative. There are numerous theories that define

the requirement for creativity in order to exist (Muirhead, 2007). One of the major theories in this regard is the implicit theory. This theory believes that there is an incorporation of cognitive and personality constructs in an individual which lead to creative production. The emphasis of this approach is on the individual judgments of creativity and examining the creative personalities and thinking.

The system theory is another important approach to study creativity. The emphasis of this theory is on the environmental and social aspects, and it explains these elements as essential for creativity in order to exist. In the field of creativity, the most current theory that has developed is the investment theory. This approach establishes a link between the creativity and an investment strategy and refers the creativity as a risk-taking situation. It can be explained as a situation in which the person invests all of his skills, understandings, and knowledge for a creative result (Noble & Bestley, 2011).

### ***Creativity Assessment***

The concept of creativity is widely regarded as a cultural element. Wolff (1981) and Barnard (2005) were staunch advocates of the cultural connection of the phenomenon. Hence, the concept of creativity is a mere product of individual experiences in which an individual's values interact with the environment for an interpretation of experiences. Creativity tends to result from experiences which emerge from cultural traits and function on a specific set of 'rules'. Creativity is regarded as a 'cultural production' and is believed to be a problem-solving feature in graphic design education. The problem-solving element of creativity encompasses the lines, colours, and shapes of information and experiences. The audiences vary from setting to setting. Therefore, an understanding of what is appropriate to a certain culture should be closely examined. Thus, creativity is a vital component in the field of graphic design. The higher degree of inhibitory control is linked with the greater success relating mental obsession on the task of creative problem solving (Cassotti et al., 2016).

### ***Graphic Design Education in Oman***

A decent understanding of the processes involved in graphic design education requires students to be able to interpret visual clues i.e. texts, types, and pictures. It necessitates learners to apply the acquired knowledge and artistic abilities in solving design problems. The main purpose of graphic design education is to improve the intuitive senses and creative abilities of graphic design students (Cheow, 2006). The sole purpose of graphic design education rests in an enhancement of creative thinking abilities among students. The field requires a vivid exploration of different lines, shapes and colours. Hence, the core aim of the instructors lies in improving the aesthetic sense and creativity of their students.

### ***Study of Graphic Design***

Students of graphic design acquire knowledge on a vast variety of subjects during their education i.e. publication, advertising, and visual-communications. It should be noticed that students of graphic design have to be creative and continuously work on the development of typographies, creative displays, and signage. The core function of most graphic designers is to convey messages in an appealing and aesthetic manner. Pibernik, Milcic and Bota (2010) asserted that graphic designers, "...must be delegated with the responsibility to develop suitable content and designs for messages." They are also responsible for the acceptance of the produced material and the manner in which it is perceived by the audience. Graphic design professionals tend to be competitive, creative and specialists in the development of quality material.

### ***Criterion-Referenced Testing***

Criterion-referenced training operates on an assessment system which is classified on the basis of student performance; and by conducting comparisons between students. There exists a need to study the pedagogical tests employed in education for a thorough assessment of creativity in graphic design students. A commonly used test is 'criterion-referenced testing' which allows an assessment by classifying students on the basis of their performance. The performance of students is commonly recorded by assessing their knowledge and skills acquired during the course of study. Hence, criterion referenced training does not rely on a sample as in the application of norm-referenced tests.

An adequate application of criterion-referenced testing requires instructors and learners to reach an agreement on the mutually decided performance of individuals. In a broader context, criterion-referenced testing is a reliable and efficient approach in the determination of student learning. The Norm-Referenced tests require students to be placed in different ranks, and their assessments are carried out on the basis of their placement. A predetermined percentage of students are placed on each level. Such a testing requires students to be graded on the basis of a comparison with their counterparts.

### ***Creativity in Omani Graphic Design Education***

In the context of Oman, no proper research has been conducted for an assessment of creativity among its graphic design students. Due to a consistent lack of research, both instructors and students do not hold a fair idea on the concept. It is primary because the element of creativity has been undervalued in graphic design education. It can be ascertained that the cultural norms have played a major role in undermining the value of creativity in Oman. Most education institutions in the developed world such as Australia, United Kingdom and the United States, emphasize on creativity.

On the other hand, the present state in terms of research on creativity is not encouraging at all in the Middle East. Hence, the availability of literature on the topic has led to stagnation in creativity enhancement among Arabic students.

A number of studies i.e. Alkholy (2007) and Abu-Awad (2008) attempted to investigate creativity in the context of Middle East. They were proponents of the idea that Orthodox traditions in Arabic education had a negative impact on the students of Arts and Design. Past studies on creativity have been focused on a psychological and sociological viewpoint. Hence, the vital components of creativity remain to be studied i.e. creativity enhancement and creativity encouragement. From the perspective of an educator, the underlying factors of curriculum issues could also be attributed to the stagnation in student's creative abilities. A major difference continues to exist between the understanding of creativity in Western and Eastern cultures.

An analysis reveals that the adopted modes of classroom instruction in Oman have negatively affected student creativity. A limited number of studies have been conducted in the field of Graphic Design and the importance of student creativity in a thorough knowledge acquisition. Now, the field has gained momentum in Oman and more students opt for a major course in the discipline. The discipline was initiated in the early 1990s in the Middle East (Abu-Awad, 2008). Advancements in the field of Education and Arts had a major impact on the developments in the field of graphic design.

Omani students who acquired their education in the field of graphic design from abroad have started their own business to capitalize on the existing niche in Oman. In the western context, such roles could be defined as 'art worker' roles in those societies. Recently, graphic design programs have been included in the university curriculum, and specialized courses are being offered in the discipline.

### ***Oman's Higher Education System***

The higher education system of Oman and its present status were the main focus of the present research. The discipline of graphic design is comparatively quite new in Oman as compared to the western world. Oman is a developing country, and most of the development was initiated in the 1970s. The first public university of Oman i.e. Sultan Qaboos University SQU was founded in 1986. Before that, the government of Oman used to send students to different countries for graphic design education i.e. Jordan, Egypt, Kuwait and some developed countries i.e. Australia, the USA and the UK. The public university, SQU, functions as a self-administered body and has a total of nine colleges. The total enrolment of the university is over 15,000 students in Bachelor's, Master's and Ph.D. programs.

During the period of the 1980s to 1990s, a few public institutes of education started 'teacher training programs'. It was a positive step on the part of Oman's government; aimed at bringing improvements. The colleges continue to be administrated by the country's Ministry of Higher

Education. The schools are located in all the major cities of the country i.e. Ibri, Nizwa, Salalah, Sohar, Sur, and Rustaq. In order to bring improvements, the colleges were transformed into schools of applied sciences. The step was taken to meet the growing demands of Omani labour markets. The disciplines included IT, engineering, communication, business administration and graphic design. Also, the Ministry of Health runs a number of health institutions and train medical staff such as paramedics, nurses, and pharmacists.

### ***Omani Graphic Design Education in traditional manner***

The system of Omani graphic design lacks an integrated framework towards the idea of creativity. One of the situations of such shortage is graphically structured programmes that can perk up the creativity of the graphics students in Oman. It has been believed, that this is an outcome of underestimating the significance of creativity in the Traditional Arabic system of education. This educational problem exists within the Arabic (Omani) context that will also fill the assumptions of creativity among the graphic students. An unexamined idea of creativity is still being operated, and it is probable to be stuck with the mystifying and uncritical perception of creativity.

A great number of complicated and complex procedures have been incorporated; during the process of problem-solving that involves designs. In the conventional design educational environment, the teaching development programs with graphic design are the basic tools such as paper, ruler, brushes and other tools for teaching the graphic skills. This type of teaching programs can originate how the students are having graphical courses usually study typography through the conventional techniques. Many of the traditional methods have been taught by the teachers, such as printing by letterpress and typing by hand. However, these conventional methods might enhance certain qualities of the learners, for instance; the technique of sketching with early graphic designs can train the mind and hand coordination skills. These creative processes help to redefine the originated solutions and promote the imagination development (Alhajri, 2016).

The traditional environment refers here to the conventional system of graphic design teachings, for instance, cut and paste. It is all about 'hands on' in preparing a new piece of design. This type of system focuses on the study of mediums and materials of common designs such as understanding the texture, shape, color, composition and light. It coaches the students to paint and draw and teaches them color circles, poster illustration, color forms, 2D and 3D forms and shapes, background using Gouache color or poster colors. Certain types of skills and intellectual abilities might be developed by using basic tools in this type. Further investigations are still needed to find its role in fostering the skills of students.

It has been believed that as a graphic designer lecturer, the traditional methods are valuable in provisions of training and coaching the students to comprehend, follow and understand the creative design process. This is due to the conventional graphic design instructors prioritize the technical skill over the thinking of graphical design. The teaching of graphical design within the conventional environment, the instructors have been more challenging to the students to be more curious about the use of new technologies. The culture within the context of Omani education usually prefers students who are considerate and courteous of others, industrious, energetic and punctual, famous with their receptive, peers and well-rounded to the ideas of other people. Private and Omani government and institutions pertain both computerized and analogue environments in teaching graphic design to undergraduate students (Dauletova, 2015).

### ***Formative assessment***

Formative assessments are the commonly used diagnostic modes of assessment. Under formative assessments, teachers look for opportunities to draw assessments on student abilities. They incorporate a constructive approach in assessing the learning activities on a continuous basis. Hence, formative assessments allow teachers to highlight the student needs and suggest remedial steps for improvements. When applying formative assessments, professors conduct observations and discussions with their students. The discussions allow the teachers to gain insight on the student's perspective and to improve their teaching plans. Formative assessments are not a tool for a review of the final product. Rayment (2007) suggested that "Formative assessments when used appropriately serve the function of a learning assessment."

## **Methodology**

### ***Research Design***

The study aimed to explore the 'Effectiveness of Criterion-Referenced Testing in Assessing Creativity within Omani Graphic Design Education'. A qualitative research design was chosen to cater the purpose of the study and to achieve the objectives of the investigation. Some scholars (e.g. Jankowicz, 2000; Maylor and Blackmon, 2005; Yin, 2009) have stressed on a right selection of an approach to study the phenomenon. By reviewing the proposed research question in the earlier section; a qualitative research design was best suited to achieve the purpose of the study.

### ***Qualitative Approach***

A qualitative approach used semi-structured questionnaire, and semi-structure interviews were used. The methodology allowed for a vital understanding on the topic. In a broader context, two main

research approaches are used i.e. inductive and deductive. The deductive approach in research is used to address issues which evolve out of theories and seek to reject or accept a certain hypothesis.

**Sample**

The sample of the study comprised of graphic design instructors in Oman. A total of 37 completed questionnaires were received, and interviews were conducted. The participants’ responses were thoroughly categorized and recorded.

**Relevance of Survey and Interviews**

After going through the available research methods, the use of a survey was decided upon. On the contrary, a quantitative research design would not have allowed for a better understanding of the topic.

**Use of Semi-Structured Questionnaires and Interviews**

Online questionnaires were used in the study. The developed survey included six close-ended and four open-ended questions. After thorough considerations, the questions were carefully developed to gain insight on the research topic. The inclusion of open-ended questions played a vital role in gaining a comprehensive insight on the topic. The questions 4, 5, 6, and 7 on the survey were open-ended and allowed the participants to share rich information on the proposed question.

**Results**

**Analysis of Participants’ Response**

**Table 1:** Frequencies for graphic design education creativity exists in graphic design education

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	28	71.8	75.7
	no	5	12.8	89.2
	other	4	10.3	100.0
	Total	37	94.9	100.0
Missing	System	2	5.1	
Total		39	100.0	

Question 1: Do you think creativity exists in graphic design education?

Out of the 33 questionnaire participants, 28 responded to the question with a ‘Yes’. Only one respondent answered with a ‘No’. 4 participants did not answer with yes or no and opted for the

‘other’ option. The majority of interview respondents believed that creativity is of vital importance in graphic design education (Table 1).

Question 2: If the answer to the previous question was ‘Yes’, do you believe that creativity can be encouraged or taught?

There seemed to be an agreement among graphic design instructors that creativity can be taught to students. Only 1 respondent felt that it is an inborn trait which is possessed by certain individuals. The response fell in complete contradiction to the studies discussed in the literature review of the study.

**Table 2:** Frequencies for creativity be enhanced Can creativity be enhanced?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	36	92.3	92.3
	no	2	5.1	97.4
	other	1	2.6	100.0
	Total	39	100.0	100.0

Question 3: Can creativity be enhanced?

Of the 33 received questionnaires, 32 believed that student creativity can be enhanced and responded the question with a ‘Yes’. None of the respondents believed that creativity in Omani students cannot be enhanced. Participant 12 in the study confirmed that creativity can certainly be enhanced, and creative abilities of graphic design students can be polished. During the interviews, 36 out of 39 participants responded to the question with a ‘Yes’ and only two participants responded with a ‘No’. Participant 37 in the study was the only one who responded with the ‘others’ option (Table 2).

Question 4: How do you define creativity within graphic design education?

When inquired how they would define creativity in the field of graphic design education; the responses were quite diverse. A majority of participants accepted that creativity is essential in all disciplines; especially in the discipline of graphic design. The variance in participant response led to the generation of different codes and themes.

Question 5: What are the creative-thinking techniques that can foster the creativity of graphic design students?

The question aimed to identify the creative-thinking techniques students of graphic design employ for creativity enhancement. The responses were carefully recorded. The respondents gave

varied answers to the proposed question. A total of eight different themes were generated. Each respondent based on their experience suggested techniques which are used by their students.

Question 6: What are the pedagogical strategies usually used by graphics lecturers to foster students' creativity?

The participants agreed that they employed certain pedagogical strategies to enhance creativity and to improve their avenues of learning. The strategies highlighted by the respondents were quite different from the previous creative thinking techniques highlighted in the earlier responses. The respondents seemed to be in agreement that more cognitive activities should be incorporated in classrooms and to achieve the desired results.

Question 7: What should a graphic design curriculum contain to promote creativity?

When inquired about the role of curriculum, the respondents highlighted the need for improvements in graphic design curriculum. The participants agreed that an effective curriculum would increase the learning avenues of students and ensure an effective transfer of knowledge.

Question 8: Do you think creativity can be assessed within the graphic design discipline?

The responses to the question on the creativity assessment revealed that a criterion referencing approach was encouraged by teachers. They believed that criterion referenced testing allows for a decent assessment of creativity and also paves the way for improvements in student learning. On the contrary, they were adamant that 'creativity' is a wide term and should be studied in the context of the discipline.

**Table 3:** Frequencies for utilizing any framework, in your pedagogy, to assess students' creativity?

Utilizing any framework, in your pedagogy, to assess students' creativity?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	26	66.7	70.3
	no	11	28.2	100.0
	Total	37	94.9	100.0
Missing	System	2	5.1	
Total		39	100.0	

Question 9: Are you utilizing any framework, in your pedagogy, to assess students' creativity?

Most respondents believed that they regularly make use of pedagogies in their graphic design classes to ensure a decent transfer of knowledge. A vast majority of participants responded to the

question with a 'Yes' and 11 participants responded with a 'No'. Most teachers admitted using some kind of pedagogical strategy in their classes. The exercises, activities and methods used in instruction forces their students to think outside the box and allow them to solve complex problems (Table 3).

Question 10: Do you think criterion-referenced tests can assess the creative outcome of graphic design students?

The use of the criterion-referenced test for the assessment of creativity was deemed appropriate by most participants. They seemed to be in favour of the approach due to its vast applications and ease of administration.

## **Disussion**

### ***Creativity Art Assessments***

Creativity can be broadly classified into four categories that include the creative product, the creative environment, the creative person and the creative process. Many design courses have very systematic processes and structures for the assessments that commonly comprise of assessment criteria and documented learning outcomes. Although, individuals and lecturers marking assessments and involved in the exterior balance of final portfolios are related to the techniques of how the work was assessed. The description of what is probable from students and how they will be assessed should be essential for the assessments of all learners. Conceivably, many of the responsibilities for not being capable of interacting or communicating the assessment approach lies in the academics of design.

Design educators are paying more concentration to define creative and transparent assessment criteria and structures and providing clear learning outcomes to students, as the education shifts the attention to be outcome-based and learner-centered. If the objective of assessment in case of current exercises is to motivate and encourage deep learning and understanding, many scholars feel that assessment promotes an apparent approach to learning, especially in art and design education. The teaching practices are fed by learning opportunity assessments, and the learning and motivations of students set the standards for the institution and the courses. Eventually, the assessment is the method and tool that is used to judge the competence of students with the focus on the product and process of teaching (Wilson, 2014).

### ***Effectiveness of Criterion-Referenced Testing***

One of the main objectives of using criterion referencing is to keep the focus on individual and differentiated assessments. By avoiding norm based referencing and opting for a feature which adequately caters student knowledge and understanding; criterion based referencing comes in handy to offer feedbacks. Most assessments are carried out on available descriptions and student performance

level. For instance, in the United Kingdom, student level descriptions form the basis for expected standards of performance. The performance standards are assessed by the range determined for performance. Hence, each level of description allows for the creation of an independent scale and student progression in each subject.

In the context of education, the detailed curriculum of students is discussed in the programs of study. Each course and stage of learning is specified. In criterion-referenced testing, a major advantage of independent scale performance is that they tend to continuously overlap between students of different age. An assumption is that student performance can be defined adequately, but independent age scale progressions also exist. Similarly, it can be ascertained that students of different disciplines progress based on the course i.e. graphic design.

### ***Critique of Criterion Based Referencing***

Some issues are also associated with the use of criterion based referencing in the field of education, linguistics, and social sciences. The issues occur when student performance is described in broad terms and require human judgment and regular interpretations. Followers of true criterion referencing method do not accept criteria which are based on interpretations. Similarly, no definite criterion can be put forward which rests on unambiguous interpretations (Wiliam, 1993). The criterion which does not allow a range of interpretations leaves less room for evaluators. In order to address the issues of 'unreliable human judgments' and rigorous assessments, it is vital to develop holistic descriptions of performance. Teachers involved in the assessment procedure, test development and curriculum planning need to be clear on the differences in student performance. The existing body of knowledge on criterion referencing could be used to increase the validity and reliability of student assessments.

### ***Validity of Criterion-Referenced Testing***

The validity of any test is vital to attaining the suggested standards of its measurement. However, in the context of criterion-referenced measurements, its validity has not received the due attention. Both validity and reliability of a test determine the questions, score variability and test length. This evident imbalance could be partially attributed to the fact that criterion-referenced measurements offer alternate ways to address the underlying topics in a study. The consistent lack of attention to queries of validity can be attributed to the perceptions on the validity of criterion-referenced measures.

### ***Contributions***

An important contribution of criterion-referenced testing focuses on the content of the response. Absolute interpretations in the measures depend on clear specifications of the domain and on the extent to which the measure is representative. These are the vital components of content validity i.e. the ones that need to be espoused in other contexts, but are rarely taken seriously under criterion referencing approach. Similarly, content validity can be regarded as the least relevant type of validity in criterion-referenced measures.

### ***Assessment of Creativity among Omani Graphic Design Students***

An analysis of interview results clearly indicates that most private and government institutions in Oman make use of both computerized and analogue environments in teaching graphic design to their students. However, the use of innovation in Omani universities is still quite limited. A computerized environment provides a wide range of digital facilities to graphic design students. Therefore, it can be ascertained that a computerized environment promotes creative learning and improves student behaviour. “Computers could facilitate the management of creative abilities and communication between students in collaborating on creative projects.” There are different programs that enhance the management and provide an interface for working creatively (Bayliss, 2016).

Kelly (2002a) also shared, “computers have become a significant contributor in graphic design education”. The assimilations provided by the use of technology cannot be achieved in an analogue fashion”. Based on the importance of innovation and technology in the field of graphic design education, a number of solutions could be found for a single issue. However, the problem-solving approach continues to remain the same in digital and analogue classroom setting.

Some current approaches of assessments specific to the creative assessment in a higher education context of graphic design have been focused. There is much appropriateness of different approaches that can be considered to what is required to be assessed in the field of creativity such as graphic design and the ways to assess it. One of the keystones in learning and teaching in the higher education is under pressure to be apparent, accurate, cost effective and fair cannot be neglected.

### ***Teaching and Encouraging Student Creativity***

Creativity encouragement is a vital concept. A number of researchers have attempted to address the question; if creativity can be taught or enhanced? A logical explanation to the question was put forward in Nickerson’s (1999) article, “Enhancing creativity” (cited in Kaufman and Sternberg, 2010); the article asserts that creativity enhancement is quite rich among students (Adams, 2005). On the other hand, both Cropley (1992) and Nickerson (1999) are believed to be the scholars

who have studied the phenomenon for the development of techniques. Similarly, Edwards (2000) asserted that “individuals can learn to become more creative in their everyday lives.” There exists a mutual consensus among scholars that by offering students the right curriculum and learning environment, the problem-solving abilities of students can be enhanced (e.g. Harpe, 2006; Mich, Franch, and Berry, 2006).

On a different note, a widespread belief also exists that creativity is a native trait and cannot be enhanced. Creativity is often regarded as an individual’s talent or rare gift which cannot be tampered with. For instance, Fryer (1996) aimed to study 1028 instructors who were of the view that human creativity is a unique trait and is possessed by certain people. Based on this perspective, creativity continues to be regarded as an ‘innate’ capability of individuals and not merely as a skill which can be acquired through processes. The present investigation on the “Effectiveness of Criterion-Referenced Testing in Assessing Creativity within Omani Graphic Design Education” had hypothesized that a student’s creativity can be enhanced. It is reasonable to believe that graphic design instructors can enhance the creative abilities of students. Such claims have also been discussed by (Mich, Franch, and Berry, 2006), who asserted, “... both groups and individuals could learn to be become more creative”. The study aimed to assess the possibility of inducing creativity among Omani graphic design students.

### ***International Research on Assessment***

The higher education system has been scrutinized, researched and criticized over the past thirty years, although the attention has initially been on subjects that need written evidence for the assessment. There are a number of related articles on assessment as functional to school art, particularly in the United Kingdom. It focuses specifically on the examination kind of assessment and the type of learning outcomes that are anticipated. A variety of problems of chapters in *The Problem of Assessment in Art and Design* are usually unconstructive when taking into account the influence of an approach that is outcome-based.

Various educational departments including the South African government are the role players particularly in the CHE (Council for Higher Education) and DHET (Department of Higher Education and Training). Higher Education Qualifications Framework (HEQF) includes all accredited providers of services of higher education and those who work within it. HEQF is an outcome based training and education framework for the standards and qualification of training and education (Giloï& du Toit, 2013).

### ***Enhancing the Creativity of Graphic Design Students***

Graphic design is a vital discipline which assists in fostering the creative tendencies of students. A number of studies (e.g. Craft, 2001) asserted that the discipline of graphic design is ideal for enhancing the problem-solving abilities of students. Contemporary studies in the discipline stress on inducing a positive attitude, technical abilities and cognitive skills among students (Cheow, 2006). One branch of graphic design education is Web Design, which “stands as an independent method which teachers use to link contextual knowledge and to amplify student creativity” (Antonenko and Thompson, 2009). It has been argued that the central role of creativity in the context of graphic design education rests in creating suitable opportunities and an environment. Also, teachers must activate the imaginative and innovative abilities of their students so that students are kept motivated.

From the analysis conducted in the paper and the results obtained from the interviews, it can be ascertained that criterion referenced testing has a number of uses in the field of graphic design. It allows instructors thoroughly to assess the creative abilities of their students. Other than providing assessment, criterion-referenced testing allows for an identification of differences between students. Graphic Design instructors can capitalize on the use of criterion-referenced testing in their classrooms and improvises the learning avenues of their students. Creativity is a vital feature in Design Education and Arts, and more emphasis must be put to bring improvements in Omani graphic design education.

It is also important to highlight the limitations of the research. The study intended to highlight the use of criterion-referenced testing for the assessment of creativity. The results and inferences are drawn in the study could not be generalized to other populations/disciplines. The literature review was solely based on the study of graphic design education. The participants of the study were also instructors of graphic design. Hence, the inferences drawn cannot be generalized to other disciplines. The core components of creativity remain the same. However, differences among disciplines i.e. Arts, Education, and Social Sciences must also be acknowledged, and thorough researches should be conducted. Similarly, articles on graphic design and creativity often become outdated due to regular advancements in the field.

### ***Future Recommendations***

In order to overcome this limitation, future studies can focus on utilizing the latest available literature on criterion referenced testing and creativity among Omani graphic design students. Also, to minimize the possibility of biases; a stronger comparison between participant response could be conducted. All in all, the Omani government must take initiatives to bring improvements in the field of graphic design. Sufficient funds should be allocated to train instructors on modes of instruction and infrastructure development in the country. If concrete steps are taken to improve creativity assessment

of students and to improve graphic design education in Oman; then positive results can be expected in the future.

### **Bioprofile of the Author**

Dr. Salman Alhajri is an Assistant professor of Art and design at the Department of Art Education at Sultan Qaboos University Graduated with a PhD in art and design from School of The Arts, of Loughborough University, UK. Dr. Alhajri emphasizes researches on the domain of art and graphic design education and creativity. In 2005, Salman graduated from University of Technology, Sydney with a master degree in Design. As a researcher, Salman is interested in exploring the links between the creativity and graphic design education and how to enhance the creative potential of graphic design students. He is very enthusiast to engage in academic activities such as conferences, journal publishing, design competitions, and lecturing internationally about Arabic fine arts practices and Arabic Calligraphy.

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# Appendices

- (please refer to published guidelines)
- C9. Involves use of radiation Yes\*  No
- (please refer to published guidelines). Investigators should contact the University's Radiological Protection Officer before commencing any research which exposes participants to ionising radiation – e.g. x-rays).
- C10. Involves use of hazardous materials Yes\*  No
- (please refer to published guidelines)
- C11. Assists/alters the process of conception in any way Yes\*  No
- C12. Involves methods of contraception Yes\*  No
- C13. Involves genetic engineering Yes\*  No

**\* If you have answered 'Yes' to any of the above please submit a full application to the Ethical Advisory Committee**

## Section D: Observation/Recording

- D1. Does the study involve observation and/or recording of participants? Yes  No  If No, please go to Section E
- If Yes,
- D2. Will those being observed and/or recorded be informed that the observation and/or recording will take place? Yes  No\*

**\* Please submit a full application to the Ethical Advisory Committee**

## Section E: Consent and Deception

- E1. Will participants give informed consent freely? Yes  If yes please complete the **Informed Consent** section below. No\*  \*If no, please submit a full application to the Ethical Advisory Committee.

Note: where it is impractical to gain individual consent from every participant, it is acceptable to allow individual participants to "opt out" rather than "opt in".

### Informed Consent

- E2. Will participants be fully informed of the objectives of the investigation and all details disclosed (preferably at the start of the study but where this would interfere with the study, at the end)? Yes  No\*
- E3. Will participants be fully informed of the use of the data collected (including, where applicable, any intellectual property arising from the research)? Yes  No\*
- E4. For children under the age of 18 or participants who have impairment of understanding or communication: - will consent be obtained (either in writing or by some other means)?

- Yes  No\*  N/A
- will consent be obtained from parents or other suitable person? Yes  No\*  N/A
- will they be informed that they have the right to withdraw regardless of parental/guardian consent? Yes  No\*  N/A
- E5. For investigations conducted in schools, will approval be gained in advance from the Head-teacher and/or the Director of Education of the appropriate Local Education Authority? Yes  No\*  N/A
- E6. For detained persons, members of the armed forces, employees, students and other persons judged to be under duress, will care be taken over gaining freely informed consent? Yes  No\*  N/A

**\* Please submit a full application to the Ethical Advisory Committee**

## Deception

- E7. Does the study involve deception of participants (ie withholding of information or the misleading of participants) which could potentially harm or exploit participants? Yes  No  If No, please go to Section F
- If yes,
- E8. Is deception an unavoidable part of the study? Yes  No\*
- E9. Will participants be de-briefed and the true object of the research revealed at the earliest stage upon completion of the study? Yes  No\*
- E10. Has consideration been given on the way that participants will react to the withholding of information or deliberate deception? Yes  No\*

**\* Please submit a full application to the Ethical Advisory Committee**

## Section F: Withdrawal

- F1. Will participants be informed of their right to withdraw from the investigation at any time and to require their own data to be destroyed? Yes  No\*

**\* Please submit a full application to the Ethical Advisory Committee**

## Section G: Storage of Data and Confidentiality

Please see University guidance on Data Collection and Storage

- G1. Will all information on participants be treated as confidential and not identifiable unless agreed otherwise in advance, and subject to the requirements of law? Yes  No\*
- G2. Will storage of data comply with the Data Protection Act 1998?

(Please refer to published guidelines)

- Yes  No\*
- G3. Will any video/audio recording of participants be kept in a secure place and not released for use by third parties? Yes  No\*
- G4. Will video/audio recordings be destroyed within six years of the completion of the investigation? Yes  No\*
- G5. Will full details regarding the storage and disposal of any human tissue samples be communicated to the participants? Yes  No\*

**\* Please submit a full application to the Ethical Advisory Committee**

## Section H: Incentives

H1. Have incentives (other than those contractually agreed, salaries or basic expenses) been offered to the investigator to conduct the investigation?

Yes<sup>†</sup>  No  <sup>†</sup>If Yes, Please provide details below

H2. Will incentives (other than basic expenses) be offered to potential participants as an inducement to participate in the investigation?

Yes<sup>†</sup>  No  <sup>†</sup>If Yes, Please provide details below

**If you have selected one of the answers above marked with an † please provide additional information on how you intend to manage the issues (please continue onto a separate sheet if required), then submit this checklist to the Secretary to the EAC:**

## Section I: Work Outside of the United Kingdom

G1. Is your research being conducted outside of the United Kingdom?

Yes  No

If Yes, you may need additional insurance cover/clearance for your research.

If, having completed this checklist, you will be making a full application to the EAC this issue will be checked for you as a part of the process. If however you do not need to complete a full application please contact Hiten Patel ([H.Patel@lboro.ac.uk](mailto:H.Patel@lboro.ac.uk)).

## Section I: Declarations

### Checklist Application only:

If you have completed the checklist to the best of your knowledge without selecting an answer marked with an \* or †, your investigation is deemed to conform with the ethical checkpoints and you do not need to seek formal approval from the University's Ethical Advisory Committee. Please sign the declaration below, and lodge the completed checklist with your Head of Department or his/her nominee.

**Declaration**

I have read the University's Code of Practice on Investigations on Human Participants. I confirm that the above named investigation complies with published codes of conduct, ethical principles and guidelines of professional bodies associated with my research discipline. *Please sign below*

**Checklist with additional information to the Committee:**

If, upon completion of the checklist you have **ONLY** selected answers which require additional information to be submitted with this checklist (indicated by a †), please ensure that all the information is provided in detail and send this checklist to the Secretary to the EAC.

**Full Application Needed:**

If on completion of the checklist you have selected one or more answers which require the submission of a full proposal please download the relevant form from the Committee's [web page](#).

**A copy of this checklist, signed by your Head of Department should accompany the full submission to the Ethical Advisory Committee.**

Signature of Responsible Investigator

*S.T. Down*

Signature of Student (if appropriate)

*[Signature]*

Signature of Head of Department or his/her nominee

*[Signature]*

Date

*04.08.2010*

**Advice to Participants following the investigation  
Investigators have a duty of care to participants.**

When planning research, investigators should consider what, if any, arrangements are needed to inform participants (or those legally responsible for the participants) of any **health related (or other) problems previously unrecognised in the participant**. This is particularly important if it is believed that by not doing so the **participants well being is endangered**. Investigators should consider whether or not it is appropriate to recommend that participants (or those legally responsible for the participants) seek qualified professional advice, but should not offer this advice personally. Investigators should familiarise themselves with the guidelines of professional bodies associated with their research.

## Questionnaire

SUR [Interview No 4]

Sample group : Graphic design lecturers and educators (Oman)

عينة الدراسة: مدرسين التصميم والتصميم الجرافيكي بالكليات الحكومية والخاصة بسلطنة عُمان

The questions الاستئلة	Question Type نوعية السؤال
Is 'creativity' either important or real in the creative industries? هل الإبداع مهم أو حقيقي في مجالات التصميم والفنون بشكل عام؟	Yes or No نعم أو لا نعم
If the answer to the previous question was 'Yes' do you believe that creativity be encouraged or taught? إذا كانت أجابك بنعم للسؤال أعلاه، هل تعتقد أن الإبداع ممكن أن يُشجع أو يُدرس؟	Yes or No نعم أو لا نعم
Can creativity be enhanced? هل بالإمكان تطوير الإبداع؟	Yes or No نعم أو لا نعم
How do you recognise the creativity within graphic design discipline? كيف بإمكانك أن تدرك وتلاحظ الإبداع في مقررات التصميم الجرافيكي، أو التصميم بشكل عام؟	Open-ended question سؤال مفتوح
What are the techniques that can foster creativity in graphic design students? ما هي التقنيات التي تعتقد بانها قد تحفز الإبداع لدى دارسي التصميم الجرافيكي؟	Open-ended question سؤال مفتوح
What are the pedagogical strategies that can be used by lecturers to foster the creativity within their students? ما هي الإستراتيجيات والطرق التربوية التي يستطيع مدرس التصميم الجرافيكي استخدامها لتطوير إبداع الطلبة؟	Open-ended question سؤال مفتوح
What should a graphic design curriculum contain to promote creativity? ما الذي يجب أن يحويه منهج التصميم الجرافيكي لكي يطور ويحفز الإبداع لدى دارسي التصميم الجرافيكي؟	Open-ended question سؤال مفتوح
Do you think creativity can be assessed within graphic design discipline? هل تعتقد بأن الإبداع يمكن أن يقاس ويُقيم في مقررات التصميم الجرافيكي؟	Yes or No نعم أو لا نعم
Are you utilizing any framework, in your pedagogy, to assess students' creativity? هل تستخدم إطار تقييمي معين لقياس إبداع الطلبة؟	Yes or No نعم أو لا نعم
Do you think criterion-referenced test can assess creative outcome of graphic design students? هل تعتقد بأن اختبار محكي المرجع قد يصلح لقياس الإنتاج الإبداعي لدى دارسي التصميم الجرافيكي؟	Yes or No نعم أو لا نعم
Do you think is it important to teach graphic design students by both analogue and digital education systems? Or you think technology is enough, for enhancing creativity of those students? هل تعتقد أنه من المهم تدريس طلبة التصميم الجرافيكي باستخدام طرق التدريس التقليدية كالقصاص واللصق اليدوي وباستخدام الأدوات الرقمية المعاصرة، أم تعتقد بأن الأنظمة الرقمية كافية لوحدها لتطوير إبداع هؤلاء الطلبة؟	Open-ended question سؤال مفتوح

السؤال الأخير مهم جداً لأنه لا يمكن أن نقيس الإبداع إلا من خلال عملية الإبداع نفسها، وليس من خلال النتيجة النهائية. وهذا هو الهدف من هذا السؤال، وهو أن نرى ما هي الأدوات والتقنيات التي نستخدمها لتطوير إبداع هؤلاء الطلبة.

Personal Information معلومات شخصية

What is your name? الاسم (Optional) .....	What is your age? العمر (Optional) ..... ٥٢ سنة	What is your gender (Optional) الجنس M <input checked="" type="checkbox"/> F <input type="checkbox"/>
What is your country? الدولة ..... السعودية	What is your institute? المعهد الذي تدرس فيه حالياً ..... كلية التربية / جامعة الملك سعود	How many years you have experience in teaching graphic design? عدد سنين الخبرة في تدريس التصميم الجرافيكى أو التصميم بشكل عام ..... ٢

مارسنا لمدة ٢٦ عاماً في تدريس التصميم الجرافيكي في جامعة الملك سعود

إختبار محكي المرجع

إختبار يقيس ما يعرفه الطلاب وما يستطيعون أداءه في ضوء محك ( Criterion ) محدد ومعتبر ، وليس في ضوء مستوى أداء مجموعة من الطلاب أدوا الإختبار نفسه مثل Norm-referenced test . الإختبارات محكية المرجع شائعة الاستخدام في التعليم العام . الهدف من الإختبارات المحكية المرجع هو تقرير أي من الأهداف أتقنها الطالب . يقدم هذا النمط من الإختبارات للمعلمين تغذية راجعة عن مدى تقدم الطلاب الدراسي نحو الأهداف التعليمية المعلنة . وعادة ما تغطي هذه الإختبارات وحدات تدريسية صغيرة لها علاقة مباشرة بما تم تدريسه . عند تصحيح هذا النوع من الإختبارات يحدد المعلمون درجة معينة ( Cut-off score ) بحيث يصنف كل من تجاوزت درجته هذه الدرجة بأنه حقق درجة الإتقان ( Mastery ) ( أي إتقان تعلم المحتوى ) . معظم الإختبارات الوطنية المعروفة في الولايات المتحدة تعد إختبارات محكية المرجع . في هذا النمط من الإختبارات من الممكن أن يحقق كل الطلاب الدرجة القصوى إذا حققوا كل المعايير المطلوبة لهذه الدرجة .

المصدر Source

- مكتب التربية العربي لدول الخليج ، مصطلحات التقويم والقياس (الإختبارات والامتحانات)،  
http://www.abegs.org/Aportal/Article/ShowDetails?id=647 تاريخ التصفح: ٢٦ مارس ٢٠١١