# An Innovative Approach towards Learners' Assessment of Instructional Process (LAIP) in an ODL Environment

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**Abstract:** Despite its popularity, the use SET in assessing teaching effectiveness for the purpose of appraisal has been controversial. This paper quantifies the weaknesses of the conventional evaluation of the instruction process and SET as a tool for assessing teaching. In this respect, this paper looks into the possibility of developing an innovative assessment tool named as the Learners' Assessment of Instructional Process (LAIP). This method is operationalised using various scoring matrices. The objective of LAIP is to offer an innovative alternative solution to assessment of instructional process in higher education institutions. Three factors have been identified as core determinants contributing to teaching and learning effectiveness, namely, knowledge, pedagogical skills and attitude. More specifically, LAIP is aimed at achieving the objectivity in the assessment of the instructional process in an ODL environment

## Introduction

With the rapid growth of ODL mode of learning all over the world, assessing the quality of teaching in these institutions has become a serious matter of concern. In ODL institutions, there are far less face-to-face interactions between instructors and learners. For example, in Open University Malaysia (OUM), a typical ODL institution in Malaysia, face-to-face facilitations by instructors constitute only 8% of students' learning time. It needs to be stressed that since there are less face-to-face interactions in the ODL learning environment, it is even more important for institutions to ensure quality guidance of learners by tutors and instructors despite the limited interactions. But the issue is: how do we determine the quality of these ODL instructors?

Learners are the core stakeholders of any learning institution. They are directly involved in the teaching and learning process. As such, it appears reasonable to assert that they are one of the most important sources of information on the teaching ability of their instructors (Aleamoni, 1981). Ironically, the use of student evaluation on teaching (SET) has always been controversial (Spooren & Mortelmans, 2006; Hess, M., Barron, A. E., Carey, L., Hilbelink, A., Hogarty, K., Kromrey, J. D., et al., 2005; England, Hutchings & McKeachie, 1996). There are concerns regarding student evaluation forms which ask questions about instructors that students are not in the position to answer (Scriven, 1995). There are also issues related to objectivity and biases in students' evaluation of their lecturers (Haladyna & Hess, 1994; Thorpe, 2002; Merritt, 2007).

Another common practice in the conventional SET instrument is to quantify teaching effectiveness by calculating the mean of all items in the lecturer-administered questionnaire. This form of assessment which places equal weight on every factor may be lacking in objectivity since factors contributing to teaching effectiveness may have varying degree of importance.

This paper proposes the development of an alternative assessment instrument, taking factors mentioned above into consideration. The instrument is named as the Learners' Assessment of Instructional Process (LAIP).

## Literature Review

Teaching is a multi-dimensional construct (Berk, 2005; Markley, 2004; Pagani & Seghieri, 2002; Marsh, 1992; Cashin, 1988). If SET were to be used to assess teaching performance, then the SET analysis carried out should provide adequate information regarding the teaching performance of the lecturers being evaluated. Subsequently, those lecturers evaluated by students need to be informed of their specific areas of weakness, if there is any. Thus the use of just an overall rating may not be sufficient. Cashin (1988), holds the view that the quality of the items used to depict opinions determines the reliability of the instrument. As such, steps must be taken to ensure that questionnaire used to measure teaching effectiveness comprises parameters and criteria that truly measure teaching effectiveness. In this respect, it is interesting to look into factors which Eggen & Kuchak (2001) have identified. They assert that teacher's subject knowledge, pedagogical skills, and positive attitudes towards teaching are core factors which contribute to teaching effectiveness.

It is a common practice for institutions of higher learning to find the mean score for all items of SET, as a way to determine the teaching effectiveness (Liaw & Goh, 2003; Santhanam, Ballantyne, Mulligan, de la Harpe and Ellis (2000); Vanleeuwen, Dormody & Brenda, 1999). The product is a global rating indicating the overall teaching effectiveness. Such global rating by itself may not be useful to the lecturers for the purpose of improvement, since the information obtained is too general. Another important point to note is that the calculation of mean score implies that all items in the questionnaire carries equal weight as factors in determining teaching effectiveness. This is in fact not true. As an example, "knowledgeable in the subject area" is probably being perceived by learners or instructors as a more important contributing factor to teaching effectiveness as compared to factors like "can interact well with students". Based on this point, the use of mean score for the purpose of comparing teaching performance among lecturers may not be a fair measure. In establishing a fairer scoring system, it may be reasonable to take into consideration the varying degree of importance of the items as contributing factors to teaching effectiveness.

## Methodology

In establishing the method of research, the following assumptions have been made:

1. Teaching effectiveness can be measured from three perspectives, namely, knowledge, pedagogical skills and attitude. Each of these perspectives comprises a number of items that have varying magnitude of effect on teaching effectiveness.
2. Both lecturers and students as stakeholders in the teaching learning process know best what they want to look for in teaching and learning.

With the above factors in mind, the research process began with qualitative data collection for the purpose of formulating the items of SET instrument to be developed. The participants comprised lecturers and students from local universities and colleges. These participants were requested to list down as many characteristics and attributes of lecturers (from the perspective of teaching and learning) that constitute teaching effectiveness. A total of 52 responses from the lecturers and 60 responses from the students were collected. The criteria were then analysed, re-classified and re-phrased using observable behavioural terms which are simple, direct, and familiar to students. The synthesis yields twenty items.

The second phase of the study was carried out with the intention of determining the relative importance or weight of each item. The study involved lecturers and students from among two local universities, a foreign university, and a local college. The participants were requested to rank the items from 1 to 20 in order of importance, based on their own perceptions. The most important item (or factor contributing to teaching effectiveness) was assigned a value of 1 and the least important factor was assigned a value of 20. A total of 254 complete entries from 99 lecturers and 155 students were collected. Complete entries here refer to responses that ranked all the twenty items, ranging to 1 to 20, without duplications and omissions.

## The Establishment of Items in the SET Questionnaire

The mean of the rankings of each item was calculated for three categories of data, namely, the means of the rankings of items by students, the means of the rankings of items by lecturers, and the means of the rankings of items by the whole group (all 254 participants).

Considering the factor that many students are unwilling to spend too much time in answering questions about lecturers, and too many questions may lead to biases, it was decided only items below ranking score of 10 would be included in the final instrument used. The final instrument thus comprises 9 items. These items were then categorised according to the three dimensions discussed earlier. Table 1 shows the distributions of items into their respective dimension. It needs to be pointed out that some items are not mutually exclusive.

| No | Item | Domain | | | Overall Means of Ranking |
|----|------|-----------|----------|----------|---------|
| | | Knowledge | Pedagogy | Attitude | |
| 1 | Knowledgeable in the subject matter | √ | | | 5.33 |
| 2 | Clear and systematic presentation | √ | √ | | 5.70 |
| 3 | Well prepared before teaching | √ | | √ | 7.07 |
| 4 | Provide adequate notes and study materials | | √ | | 8.01 |
| 5 | Able to make the subject interesting | √ | √ | | 8.02 |
| 6 | Voice can be heard clearly | | | | 8.08 |
| 7 | Show enthusiasm in teaching | | | √ | 8.35 |
| 8 | Able to motivate students | | √ | √ | 8.69 |
| 9 | Able to interact well with students | | | √ | 9.76 |

**Table 1: Revised items for student evaluation on teaching (SET) questionnaire**

## The Establishment of Scoring Matrices

As mentioned earlier, teaching effectiveness is a multi-dimensional construct. Therefore, it is measured as a product of several factors. However, it should not be assumed that all factors carry equal weight in determining an instructor's teaching effectiveness. Some factors may have a greater impact. For example, the factor "knowledge in the subject area" in this study was perceived by students as well as lecturers as a more important factor than "able to interact well with students". As such, to establish a quantitative score as a measurement of teaching effectiveness based on the ratings given by students for all factors (items), the conventional global mean rating may not be a fair measure.

The establishment of scoring matrices for the SET instrument developed in this study was guided by the principle that the higher the perceived ranking of an item, the more weight should be assigned to that item in the calculation of a score for teaching effectiveness. In this study, a smaller mean value of the rankings indicates a higher degree of ranking, Therefore, the weight assigned to each item in the determination of a quantitative teaching score for teaching effectiveness should be reciprocally proportional to the mean of the rankings of that item (by both lecturers and students). In short, the assigned weight of an item in the establishment of the final score is proportional to the reciprocal of the means of the ratings. Furthermore, it has been observed that lecturers generally view ratings in the form of percentage as a more meaningful figure as compared to the 5 point rating. Therefore, in the scoring matrices established, the weighted Likert-scaled scores have been converted to their equivalence in the percentage form. Table 2(i), Table 2(ii), Table 2(iii) and Table 2(iv) show the scoring matrices for the measurement

of teaching effectiveness from the knowledge domain, pedagogical domain, attitude domain and the overall teaching effectiveness respectively.

| Item Description | Overall means of rankings | Reciprocal of means of rankings | Scoring Matrix Based on Scale of 1- 5 | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 |
| Knowledgeable in the subject matter | 5.33 | 29.81 | 5.96 | 11.92 | 17.89 | 23.85 | 29.81 |
| Clear and systematic presentation | 5.70 | 27.88 | 5.58 | 11.15 | 16.73 | 22.30 | 27.88 |
| Well prepared before teaching | 7.07 | 22.48 | 4.49 | 8.99 | 13.48 | 17.98 | 22.47 |
| Provide adequate notes and study materials | 8.01 | 19.84 | 3.97 | 7.93 | 11.90 | 15.87 | 19.84 |
| | | Sum | 20 | 40 | 60 | 80 | 100 |

**Table 2(i): Teaching effectiveness scoring matrix (knowledge domain)**

| Item Description | Overall means of rankings | Reciprocal of Means of Rankings | Scoring Matrix Based on Scale of 1- 5 | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 |
| Clear and systematic presentation | 5.70 | 0.18 | 6.50 | 12.99 | 19.49 | 25.99 | 32.49 |
| Provide adequate notes and study materials | 8.01 | 0.13 | 4.62 | 9.25 | 13.87 | 18.49 | 23.12 |
| Able to make the subject interesting | 8.02 | 0.13 | 4.62 | 9.24 | 13.85 | 18.47 | 23.09 |
| Able to motivate students | 8.69 | 0.11 | 4.26 | 8.52 | 12.79 | 17.05 | 21.31 |
| | | Sum | 20 | 40 | 60 | 80 | 100 |

**Table 2(ii): Teaching effectiveness scoring matrix (pedagogical domain)**

| Item Description | Overall Means of rankings | Reciprocal of Means of Rankings | Scoring Matrix Based on Scale of 1- 5 | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 |
| Well prepared before teaching | 7.07 | 0.14 | 5.79 | 11.58 | 17.37 | 23.16 | 28.95 |
| Provide adequate notes and study materials | 8.01 | 0.13 | 5.11 | 10.22 | 15.33 | 20.45 | 25.56 |
| Show enthusiasm in teaching | 8.35 | 0.12 | 4.90 | 9.81 | 14.71 | 19.61 | 24.52 |
| Interact well with students | 9.76 | 0.10 | 4.19 | 8.39 | 12.58 | 16.78 | 20.97 |
| | | Sum | 20 | 40 | 60 | 80 | 100 |

**Table 2(iii): Teaching effectiveness scoring matrix (attitude domain)**

| Item Description | Overall Means of rankings | Reciprocal of Means of Rankings | Scoring Matrix Based on Scale of 1- 5 | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 |
| Knowledgeable in the subject matter | 5.33 | 0.19 | 3.09 | 6.18 | 9.26 | 12.35 | 15.44 |
| Clear and systematic presentation | 5.70 | 0.18 | 2.89 | 5.78 | 8.66 | 11.55 | 14.44 |
| Well prepared before teaching | 7.07 | 0.14 | 2.33 | 4.66 | 6.98 | 9.31 | 11.64 |
| Provide adequate notes and study materials | 8.01 | 0.13 | 2.05 | 4.11 | 6.16 | 8.22 | 10.27 |
| Able to make the subject interesting | 8.02 | 0.13 | 2.05 | 4.10 | 6.16 | 8.21 | 10.26 |
| Voice can be heard clearly | 8.08 | 0.12 | 2.04 | 4.07 | 6.11 | 8.15 | 10.19 |
| Show enthusiasm in teaching | 8.35 | 0.12 | 1.97 | 3.94 | 5.91 | 7.88 | 9.86 |
| Able to motivate students | 8.69 | 0.11 | 1.89 | 3.79 | 5.68 | 7.58 | 9.47 |
| Interact well with students | 9.76 | 0.10 | 1.69 | 3.37 | 5.06 | 6.75 | 8.43 |
| | | Sum | 20 | 40 | 60 | 80 | 100 |

**Table 2(iv): Overall teaching effectiveness scoring matrix**

## Discussion

In the above study, the overall average ranking for each item in the questionnaire was obtained by aggregating the rankings assigned to every subject, then followed by calculating their means. The rankings obtained were then used in the calculation of the weighted coefficients, which in turn determine the weighted score of each item. Such a method raises the issue of external validity. Will the relative rankings and the ranking values be the same again? The answer is likely to be negative. There is a possibility of a slight variation in the relative rankings of the items if the research is to be conducted again by varying some variables such as the sample size, the targeted group. The ranking values will certainly vary. This in turn changes the relative weight of each factor. In other words, the scoring matrices established using this method is not meant to be an absolute index. It merely serves to establish a fairer system of evaluation.

At this stage, the established items of the questionnaire which have been classified into three categories have not been subjected to the validation of their internal consistency within each classification. This is probably another area of research that need be looked into in the future.

The collaborative effort of lecturers and students in the establishment of questionnaire items is aimed at improving the validity of the items. In this respect, one basic assumption has been made, that is, lecturers and students know what the factors that constitute effective teaching are. However, it needs to be noted that the ultimate aim of teaching is to improve learning. As such, effective teaching should be portrayed in students learning performance. Based on this argument, it may be necessary to carry out another test of validity to look into the correlations between the evaluation outcomes of lecturers and the performances of the students.

## An Illustration

The SET questionnaire was administered in a postgraduate class on a trial basis, and one of the responses was used for the purpose of illustration. In the feedback form selected, five items were rated a score of 3 each, two items were rated a score of 4 each and the other two were rated a score of 5 each. The results generated using the proposed scoring matrices are shown in Table 3(i), Table 3(ii), Table 3(iii) and Table 3(iv) respectively.

| Item Description | Rating | Score |
|---|---|---|
| Knowledgeable in the subject matter | 3 | 9.26 |
| Clear and systematic presentation | 3 | 8.66 |
| Well prepared before teaching | 3 | 6.98 |
| Provide adequate notes and study materials | 3 | 6.16 |
| Able to make the subject interesting | 3 | 6.16 |
| Voice can be heard clearly | 5 | 10.19 |
| Show enthusiasm in teaching | 4 | 7.88 |
| Able to motivate students | 4 | 7.58 |
| Interact well with students | 5 | 8.43 |
| Total Score | | 71.31 |

**Table 3(i): Overall rating of teaching**

| Item Description | Rating | Score |
|---|---|---|
| Knowledgeable in the subject matter | 3 | 17.89 |
| Clear and systematic presentation | 3 | 16.73 |
| Well prepared before teaching | 3 | 13.48 |
| Provide adequate notes and study materials | 3 | 11.90 |
| Total Score | | 60.00 |

**Table 3(ii): Rating of teaching (knowledge domain)**

| Item Description | Rating | Score |
|---|---|---|
| Clear and systematic presentation | 3 | 17.89 |
| Provide adequate notes and study materials | 3 | 16.73 |
| Able to make the subject interesting | 3 | 13.48 |
| Able to motivate students | 4 | 15.87 |
| Total Score | | 63.97 |

**Table 3(iii): Rating of teaching (pedagogical domain)**

| Item Description | Rating | Score |
|---|---|---|
| Well prepared before teaching | 3 | 17.89 |
| Provide adequate notes and study materials | 3 | 16.73 |
| Show enthusiasm in teaching | 4 | 17.98 |
| Interact well with students | 5 | 19.84 |
| Total Score | | 72.43 |

**Table 3(iv): Rating of teaching (attitude domain)**

It is interesting to note that although the particular lecturer obtained a global rating of 71.31 for teaching effectiveness, the scores he obtained which measures his teaching effectiveness from the knowledge domain (60.00) and pedagogical domain (63.97) indicate that he needs to place more effort towards the improvement of these particular domains. On the other hand, a score of 72.43 for the attitude domain indicates that the lecturer was perceived by students as having a reasonably positive attitude towards teaching.

## Conclusion

An effective LAIP measures what it is supposed to measure. Effective LAIP begins with an appropriately designed questionnaire, with items relevant to the purpose and agreed upon by the student evaluators and the lecturers to be evaluated. An effective LAIP should also provide adequate information on different aspects of teaching efficacy. This research study focused on these issues. Students and lecturers were involved in the questionnaire design process. To ensure a fairer system of evaluation, another survey was carried out to establish the rankings of every item in the questionnaire, according to the order of importance, as perceived by students and lecturers. Scoring matrices were established with these rankings being taken into consideration. The scoring matrices allow the measurement of overall teaching performance, as well as teaching efficacy from the perspective of knowledge, pedagogical skills and knowledge. This research is an attempt to produce a more objective LAIP instrument for academic purpose as well as for administrative decision making purpose. It is hoped that the idea would inspire other research to explore the possibility of producing a truly valid, reliable and fair system of evaluation for assessing teaching.

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