# Article

# Using portfolios to assess professional competence and development in medical laboratory sciences

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The use of portfolios in health professions education has increased dramatically over the years.[1-3] The enthusiastic acceptance of this principle is in part born out of the ever-growing interest in outcomes-based education in all divisions of health science.[2] Portfolios not only stimulate professional development and reflective learning, they also provide opportunity for self-direction, and avenues for faculty feedback.[1] Portfolios have also been recommended for the assessment of professional development in medical education,[3] and several reports document their successful use in the assessment of competence at both undergraduate and postgraduate levels.[4] To stimulate engagement and to assess professional development during clinical laboratory training, portfolio development and assessment was proposed for final-year students for the Bachelor of Medical Laboratory Sciences and the Diploma in Medical Laboratory Technology, Kampala International University, Uganda, in 2008. This article reports the experience of the use of portfolios to assess professional development in these programmes.

## Methods

Institutional approval for the study was obtained from the Institutional Review and Ethics Committee. Eighteen final-year students undergoing clinical laboratory training in the teaching hospitals and participating in routine daily laboratory work were requested to compose and maintain a portfolio detailing their daily experiences, work done, and lessons learnt during their training. Their supervisors and programme facilitators provided daily feedback and endorsed all entries. At the end of their training, the portfolios were examined by a team of faculty and an external examiner. The students were also required to make a 15-minute presentation based on their portfolio, and to participate in an interview. A rating rubric (Table I) used for the assessment considered the quality of a student's presentation, portfolio content, demonstration of development over time, and ability to make professional judgement. To obtain a pass, a student is expected to meet all the criteria in the rubric in the collective judgement of the assessors. Questionnaires were used to determine the students' and raters' views on the usefulness of this method of assessment. The data were analysed quantitatively and qualitatively.

## Results

Seventy-two per cent of the students and assessors accepted the method as a valid and effective means of assessing professional competence. Fifteen of the eighteen students reported that it improved their commitment to laboratory training, and encouraged reflection. Both faculty and students were of the opinion that it allowed for frequent feedback and

**Table I. Rubric for the assessment of portfolios**

| Criteria | Criterion met | Criterion not met |
|---|---|---|
| 1. **Presentation was complete in 15 minutes** (Student completed presentation in 15 minutes) | | |
| 2. **Quality of presentation** (Text readable from 2 meters (minimum font size 32); good organisation; student communicated with audience) | | |
| 3. **Student showed progressive development over time** (Portfolio showed student development from dependent trainee to independent professional) | | |
| 4. **Student reflected on experiences and could make good professional judgement** (Student could make decisions relevant to his work) | | |
| 5. **Portfolio content was adequate** (Length and scope of portfolio showed adequate experience) | | |
| 6. **Overall assessment** | Pass (all the criteria were met) | Fail (some or all of the criteria were **NOT** met) |
| **General comments:** | | |

more engagement in the programme. Many believed that it was a rational assessment as it captured development over time, but it was time consuming and quite tasking on both students and the staff. Eighty-eight per cent were of the view that it should be a supplement and not a substitute for the standard written and practical tests.

## Discussion

The evolution of a portfolio as a tool for the assessment of professional competence and development offers several advantages over the traditional standard tests which, to a large extent, are 'reductionist' and do not capture progression over time.[3] Application of portfolio assessment in medical laboratory sciences education is not widespread, and only a few reports are available in the literature.[4] This study has demonstrated that portfolio development and assessment is well accepted in the Medical Laboratory Sciences programme. An important aspect of medical education is the matching of assessment methods with learning mode,[5] as assessment drives learning. Portfolio assessment aligns well with competency-based education. Tenets of the latter include learner centredness, formative feedback, developmental process, reflection, and multiple types and sources of assessment.[1] This study demonstrated it clearly as it promoted student /staff engagement in the clinical laboratory training programme, students' ownership of their training, and reflective learning.

Although its introduction extends the methods of assessment in medical laboratory sciences, the study showed that many of the participants would not welcome it as the only mode of assessment. Rather it would be a valuable addition to the traditional methods of assessment of competence. The limitations of this study include the small sample size. It is recommended that a larger sample of students be included in a more elaborate study, possibly over a longer period. To ease the burden of assessment, using a structured interview to assess the portfolio as recommended by Burch and Seggie,[6] could be helpful.

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