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## Perceptions of Assessment Among Undergraduate and Postgraduate Students of Four Health Science Disciplines

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### Abstract

The use of different types of assessment to improve student learning needs to be balanced with reports that student perception, rather than the objective features of the task, significantly influences how students approach learning. The present study surveyed 492 undergraduate and postgraduate students from four health science disciplines (occupational therapy, physiotherapy, speech pathology, and audiology) at a large Australian university on how helpful different types of assessment had been in assisting their learning. Between 73.4% and 90.4% of the students valued practical exams, individual tasks, written assignments, and written exams requiring application of knowledge. Between 29.1% and 59.7% of the students valued oral presentations, group tasks, portfolios, online assessment, and multiple choice exams. Entry level and type of program were found to influence perceptions. Postgraduate students valued tutorial participation more than undergraduate students ( $p$

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### ABSTRACT

The use of different types of assessment to improve student learning needs to be balanced with reports that student perception, rather than the objective features of the task, significantly influences how students approach learning. The present study surveyed 492 undergraduate and postgraduate students from four health science disciplines (occupational therapy, physiotherapy, speech pathology, and audiology) at a large Australian university on how helpful different types of assessment had been in assisting their learning. Between 73.4% and 90.4% of the students valued practical exams, individual tasks, written assignments, and written exams requiring application of knowledge. Between 29.1% and 59.7% of the students valued oral presentations, group tasks, portfolios, online assessment, and multiple choice exams. Entry level and type of program were found to influence perceptions. Postgraduate students valued tutorial participation more than undergraduate students ( $p < 0.05$ ). Undergraduate physiotherapy students valued practical exams (standardised patients) ( $p < 0.0001$ ) and standardised patient interactions ( $p < 0.0001$ ), and undergraduate speech pathology students valued written assignments (overall) ( $p < 0.0005$ ), more than undergraduate students from the other disciplines. Matching assessment tasks to student group is warranted if greater student satisfaction is to be achieved.

### INTRODUCTION

Assessment “denotes any appraisal (or judgement, or evaluation) of a student’s work or performance.”<sup>1</sup> It is often divided into formative – how judgements about the quality of student performance can be used to improve student competence, and summative – summarizing the achievement status of a student, often at the end of a course of study.

Educators are encouraged to use different types of assessment as a way of assisting student learning. This is reflected in the many hundreds of publications describing assessment types such as individual and group assessments, written assessments, multiple choice exams, online assessments, oral assessments, practical exams, tutorials, and portfolios (to name but a few). It is also reflected in the wide variety of assessments used within single disciplines amongst and within teaching institutions.<sup>2,3</sup>

Such diversity in assessment is further encouraged in the health sciences of physiotherapy (PT), occupational therapy (OT), speech pathology (SP), and audiology (AUD). This appears to be for two reasons. First are the quality assessment regimes emphasized in these health sciences, such as making goals and standards explicit and aligning assessments with those goals.<sup>4</sup> Second is the need to assess student competence in the full range of theoretical knowledge, practical skills, and ethical and professional behaviour required by the governing bodies for these professions.

While diversity in assessment has been encouraged, it also needs to be balanced against student perceptions of assessment and the effects this has on how they approach and engage in learning.<sup>5</sup> In this regard, an assessment that appears sound in theory may fail in practice because students believe (correctly or incorrectly) that they learn little from it or that it does not contribute directly to their final grades.<sup>4</sup> This possibility is suggested both in the unpublished (institutional course evaluations and student experience questionnaires) and published literature and could be related to student understanding (or misunderstanding) of the criteria and standards used to judge their performances.<sup>6,7</sup> Even if this understanding is poor, students still want to feel that their knowledge and skills have been adequately assessed using high quality assessments.<sup>1</sup> Some authors have taken this a step further by arguing that when it comes to framing the curriculum, student perceptions of assessment are more influential than the objective features or the intended design elements of the assessment itself, with these perceptions potentially overpowering other features of the learning environment.<sup>8-13</sup>

Reports of student perceptions of assessment have also shown that different students perceive different assessments differently. This can be seen in reports of student age and gender being related to perceptions of continuous assessment and examinations in undergraduates in Human, Environmental, and Social Studies, and student work experience and national or international status being related to perceptions of group projects and peer assessment in undergraduates in international business studies.<sup>14,15</sup> Such variation amongst student groups limits our ability to generalize the perceptions of one group to those of another.

To our knowledge, studies investigating how students in the allied health disciplines of PT, OT, SP, and AUD perceive their assessment have been mostly limited to individual types of assessment applied to single student groups within individual disciplines. Examples include reports that physiotherapy students were satisfied with portfolio assessments, simulated learning environment assessments, and mock clinical and clinical assessments by teachers but not by their classmates or themselves, while speech pathology students were satisfied with clinical assessments using an assessment tool they had helped to develop.<sup>16-19</sup> While useful, the results of these studies cannot be used for larger scale comparisons across allied health disciplines, types of student and types of assessment.

In view of the limitations discussed above, the aims of the present study were to 1) determine how students in the allied health disciplines of OT, PT, SP, and AUD at a large university in Australia perceived their assessment, 2) to determine whether these perceptions were related to enrolment status (under- or post-graduate) and discipline, and 3) to suggest ways of improving these assessments for future students of these health sciences in this and similar universities in the region. This study also served to extend previous work by the same authors on perceptions of feedback in this same student sample.<sup>20</sup>

## **METHODS**

### **Study design**

A single observation, non-experimental design was used to complete this study.

### **Sample**

All students enrolled in the second or fourth years of the undergraduate programs for OT, PT, or SP or the second year of the Graduate Entry Masters programs for OT, PT, SP, or AUD at a large university in Australia were invited to participate in the study. The former were classified as *undergraduates*, and the latter as *postgraduates* as they had already graduated from a previous bachelor's program and were now completing their training in their chosen health science by way of a postgraduate master's degree. The postgraduate students were, on average, three years older than the undergraduate students. These particular student cohorts were chosen so that they would have had sufficient time in their respective programs to have undergone a range of assessment types, and so that they were sufficiently far apart in time to obtain a mix of more junior and more senior students.

### **Instrument**

A questionnaire was used to investigate students' experiences of assessment and feedback in the non-clinical courses they had undertaken in their programs. Students were asked to select from a series of statements the one that most accurately reflected their belief about the purpose of assessment. Thirty-five questions then canvassed students' views on Assessment & Learning,

Nature & Quality of Assessment Tasks, and Feedback. Only the items related to the Nature and Quality of Assessment will be described here.

The section of the questionnaire covering Nature and Quality of Assessment asked students to use a Likert-like scale (ranging from 1 = strongly disagree to 5 = strongly agree) to indicate their level of agreement on statements regarding 20 types of assessment. Some of these referred to the same assessment task that had been administered in different ways (e.g. an assessment task that had been administered to groups versus individuals). Students were given the option of responding *NA* (not applicable) if they had not completed a particular type of assessment. Measures of the perceived usefulness of each type of assessment were considered to be proxies for its effectiveness, notwithstanding the simplistic nature of this assumption.<sup>20</sup>

The test-retest reliability of each of the 20 questions in the sections of the questionnaire covering the Nature and Quality of Assessment was estimated by having 20 students complete these questions on two separate occasions spaced four weeks apart. These students were sampled from the same OT, PT, SP, or AUD programs involved in the main study and were stratified to approximately match the proportions of the main study by student discipline, graduate status, and year. The data obtained from these students was not used in the main study. Wilcoxon signed rank testing (two tailed) showed the students' responses to each question did not differ (at the 5% significance level) between the two response occasions, with *p* values for individual questions ranging from 0.06 to 1.00. Spearman's rho correlation coefficients (two tailed) showed the students' responses to each question were correlated (at the 5% significance level) between the two response occasions, with *r* coefficients for individual questions ranging from 0.79 to 0.98.

The content validity of the questionnaire was enhanced by it being designed with the assistance of the University's Teaching and Educational Development Institute, and it being based on instruments used in previous studies and this institute's existing student satisfaction surveys.<sup>20,21</sup> The questions in the questionnaire were iteratively piloted on five different samples of five to ten students from the same OT, PT, SP, or AUD programs sampled in the main study, although these students did not participate in the main study. The feedback from each group of students was reviewed by the researchers and the institute staff, and the questions on the questionnaire were improved for the next piloting until the researchers and staff agreed that the questions represented the various content domains that the questionnaire was designed to measure.

### Procedure

The project was cleared by the relevant university institutional ethics committee prior to commencement. The questionnaire, participant information letter, and consent form were given to each student by a research officer (who was not involved in the teaching programs in the school) during an introductory lecture at the beginning of the teaching year. The research officer described the purpose of the survey, with those students giving written informed consent then completing the survey during the allocated class time. Participation was voluntary with each questionnaire returned to the research officer with no identifying features other than each student's program type and year level.

### Data Analysis

The students' responses to each item on the questionnaire were collapsed to simplify the analysis and presentation of results. The "Strongly agree" and "Agree" categories were combined to indicate a positive response to each statement and the "Undecided", "Disagree," and "Strongly Disagree" categories were combined to indicate a negative response to each statement. The "Undecided" category was included as a negative response to ensure that the responses classified as positive were clearly positive. The conservative nature of this decision was noted.

Pearson chi-square analyses were used to identify significant differences at the 5% level in student perceptions of assessment amongst disciplines (PT, OT, SP, and AUD), between program types (undergraduate versus postgraduate), and amongst program types and disciplines.

### RESULTS

The response rates were the same as those reported previously.<sup>20</sup> The overall rate was 75.5% (492/652), with similar rates obtained for undergraduate (76.0%, 399/525) and postgraduate (73.2%, 93/127) students. The rates for each discipline overall, for undergraduate students, and for postgraduate students (respectively) for PT were 54.7% (140/256), 60.4% (131/217), and 23.1% (9/39); for OT were 94.3% (182/193), 94.8% (163/172), and 90.5% (19/21); for SP were 79.9% (131/164), 77.2% (105/136), and 92.9% (26/28); and for AUD were 100% (39/39), no undergraduate option, and 100% (39/39).

Table 1 shows the percentages of students responding positively to each item in the section of the questionnaire covering "Nature and Quality of Assessment" for all students combined, for all students by enrolment status (UG or PG), and for all

students by discipline. It also shows the results of Chi squared analyses for differences in these responses amongst these student groups. Table 2 shows these percentages and Chi squared results for UG students only by discipline, and PG students only by discipline. Between 73.4% and 90.4% of all students responded positively to individual tasks (overall), written exams (requiring application of knowledge), written assignments (overall and individual), practical exams (overall, real patients and standardised patients), and standardised patient interactions. Between 29.1% and 59.7% of all students responded positively to group tasks (overall), written exams (overall or requiring recall of content), multiple choice exams, online exams, written assignments (group), online assessment/activities, oral presentations (overall, individual or group), tutorial participation and portfolios. Postgraduate students were more likely to respond positively to tutorial participation ( $\chi^2=3.96$ ,  $P<0.05$ ). Multiple differences were observed between disciplines with the largest differences showing PT students were more likely to respond positively to practical exams (standardised patients) ( $\chi^2=24.24$ ,  $P<0.00005$ ) and standardised patient interactions ( $\chi^2=26.28$ ,  $P<0.00005$ ), although when investigated by enrolment status, this result was only found in the undergraduate PT students ( $\chi^2=24.26$ ,  $P<0.0001$ , and  $\chi^2=30.77$ ,  $P<0.0001$ , respectively), and SP students were more likely to respond positively to written assignments (overall) ( $\chi^2=14.03$ ,  $P<0.005$ ), although when investigated by enrolment status, this result was only found in the undergraduate SP students ( $\chi^2=15.73$ ,  $P<0.0005$ ). More differences between disciplines were present in UG students compared to the PG students.

## DISCUSSION

The nature and quality of various assessment tasks was divided into a highly rated and a lowly rated group. The presence of written and practical exams in the highly rated group bodes well for the continued high use of these assessment types in the health sciences. The presence of group tasks (in all forms) in the lowly rated group is concerning given the numerous purported benefits (academic, social and psychological) of this assessment type as a learning tool. These include developing student ability to interact effectively with others in order to work towards a common goal, all of which are recognised as a graduate attribute in many universities and form important parts of many university teaching and learning enhancement plans, particularly in the health sciences.<sup>22-25</sup> Similarly, the presence of portfolio and online tasks in the lowly rated group was also concerning given portfolio tasks are thought to promote the self-reflection needed to develop as a health professional and online tasks are being increasingly used to ease teacher workload, and had been shown to be accepted by physiotherapy students in other studies.<sup>16,26</sup> These findings suggest a need to find ways to improve student experiences of group assessment, portfolio and online tasks.

### Differences by Entry Level

For all four health science disciplines combined, the results suggest entry level of student on its own was not a major factor in student ratings of assessment. The finding that more post-graduate students indicated they gained more from tutorial participation was likely to have resulted from the greater experience (academically and generally) and maturity of the post-graduate group.

### Differences by Discipline

While many differences were observed amongst the four health science disciplines, only those significant at the 1% level or better will be discussed here. The more positive responses shown by PT students on practical exams (standardised patients) and standardised patient interactions could indicate a preference for practical ("hands-on") assessments that more closely reflect the practice of PT. In contrast, the more positive responses shown by SP students on written exams (requiring application of knowledge), written assignments, and individual and online assessments/activities, and the more positive responses shown by AUD students on written exams (requiring application of knowledge) and online tasks, could indicate a preference for theoretical assessments that more closely reflect the use and reporting of this theory in the practice of SP and AUD. An alternative explanation for these preferences could lie in the different use of these types of assessment in the different disciplines. In particular, a higher frequency of use and greater weighting of a particular type of assessment in a discipline could lead to a greater acceptance of its value as a learning tool by students of that discipline.



**Table 1. The percentages of students responding positively to each item in the section of the questionnaire covering “Nature and Quality of Assessment” for all students combined, for all students by enrolment status, and for all students by discipline, and the results of the Chi squared analyses for differences amongst these student groups.**

Statement	All (%)	All UG (%)	All PG (%)	$\chi^2$	<i>p</i>	All PT (%)	All OT (%)	All SP (%)	All AUD (%)	$\chi^2$	<i>P</i>
Practical exams (real patients)	90.4	90.0	92.1	0.25	0.62	87.1	88.8	96.9	84.2	7.12	0.07
Practical exams (overall)	86.2	85.6	88.9	0.59	0.44	90.9	84.2	83.2	89.7	4.27	0.23
Individual tasks (overall)	80.2	79.0	85.5	1.83	0.18	76.7	80.7	82.4	82.8	1.59	0.66
Written assignments (individual)	80.1	80.8	76.8	0.66	0.42	72.2	83.2	84.7	75.9	8.43	<0.05
Practical exams (standardised patients)	76.6	77.5	72.8	0.80	0.37	89.7	76.5	62.2	69.0	24.24	<0.00005
Written exams (requiring application of knowledge)	76.4	76.2	77.1	0.03	0.86	71.2	73.2	85.1	82.8	8.74	<0.05
Standardised patient interactions	75.3	75.6	74.1	0.08	0.78	88.3	76.7	58.3	70.4	26.28	<0.00005
Written assignments (overall)	73.4	73.9	71.1	0.28	0.60	63.2	74.6	83.2	69.0	14.03	<0.005
Written exams (overall)	59.7	58.9	63.9	0.71	0.40	63.9	53.9	60.8	72.4	5.52	0.14
Tutorial participation	59.6	57.6	69.6	3.96	<0.05	59.5	55.3	62.4	75.0	4.54	0.21
Written exams (requiring recall of content)	51.4	52.1	48.2	0.41	0.52	54.9	46.7	54.2	51.7	2.67	0.44
Oral presentations (overall)	44.6	43.1	51.9	2.04	0.15	43.3	43.6	45.9	51.7	0.84	0.84
Oral presentations (individual)	43.6	43.3	45.2	0.09	0.77	44.4	41.1	45.3	48.3	0.84	0.84
Group tasks (overall)	40.4	38.6	48.2	2.59	0.11	41.7	40.9	36.0	48.3	1.78	0.62
Portfolios	39.6	37.5	51.1	3.04	0.08	30.2	43.1	48.5	50.0	8.71	<0.05
Written assignments (group)	38.8	38.3	41.3	0.25	0.62	34.6	44.9	34.6	35.7	4.74	0.19
Oral presentations (group)	37.5	35.9	45.1	2.09	0.15	37.5	36.4	41.3	30.0	1.15	0.77
Online assessment/activities	34.5	33.4	41.8	1.49	0.22	30.6	28.5	45.9	44.4	10.87	<0.05
Multiple choice exams	33.7	34.9	28.0	1.41	0.23	34.8	28.7	40.5	28.6	5.12	0.16
Online exams	29.1	29.3	28.1	0.04	0.85	25.6	24.7	36.9	57.1	8.48	<0.05

### Differences by Entry Level and Discipline

When the differences between health science disciplines were examined for undergraduate and post-graduate students separately, many of the differences discussed above remained in the undergraduate students but not in the post-graduate students. This suggests a potential interaction between entry level and discipline, with undergraduate students more likely to show differences by discipline. A possible reason for this could be the greater academic and potentially life experience present in the post-graduate students, which could lessen any discipline specific differences in their responses to the range of assessment types examined in this study. Another reason could be the smaller sample sizes present in the post-graduate data, which weakens and direct conclusions drawn from those samples.

### Methods of improving assessment

Based on this study's data, the assessment of UG and PG students in the allied health disciplines of OT, PT, SP, and AUD could be improved by reassessing the use of oral presentations, group tasks, online tasks, and multiple choice exams. These aspects may need to be considered differently for different combinations of program and discipline type.

For example, this study's results suggest some written exams (requiring application of knowledge) could be replaced with practical exams, to which the students responded more positively. Such a change would, however, need to be considered within the contexts of student entry level, discipline, and type of practical exam. While all students responded very positively to practical exams involving real patients, only the undergraduate PT students responded with similar positivity to practical exams involving standardized patients. Another example from this study's results would be to replace some written exams (requiring application of knowledge) with written assignments (individual), both of which all students rated with similar levels of positivity (except perhaps the undergraduate PT students who were less positive than other students towards these written assignments). This example also supports findings that higher proportions of coursework assignments rather than end-of-semester exams are

associated with higher student marks, better predictions of long-term learning, and higher quality of learning.<sup>2</sup> An immediate concern regarding any increase in practical exams and written assignments would be the associated increase in teacher workload. This need not be the case for written assignments, however, with some authors reporting a greater increase in the final grades of engineering students when teacher assessment of assignments (graded) was replaced with periodic peer-assessment of assignments (non-graded).<sup>27</sup> These authors argued that this use of peer-assessment (non-graded) improved the quality of student engagement without generating “piles of marking” for the teachers involved.

**Table 2. The percentages of students responding positively to each item in the section of the questionnaire covering “Nature and Quality of Assessment” for all UG students by discipline, and all PG students discipline, and the results of the Chi squared analyses for differences amongst these student groups.**

Statement	UG PT (%)	UG OT (%)	UG SP (%)	$\chi^2$	<i>P</i>	PG PT (%)	PG OT (%)	PG SP (%)	PG AUD (%)	$\chi^2$	<i>P</i>
Practical exams (real patients)	85.9	89.3	95.9	4.58	0.10	100.0	84.6	100.0	84.2	5.26	0.15
Practical exams (overall)	90.2	84.2	82.1	3.36	0.19	100.0	84.2	87.5	89.7	1.61	0.66
Individual tasks (overall)	75.8	80.2	81.0	1.16	0.56	88.9	84.2	88.5	82.8	0.47	0.93
Written assignments (individual)	71.8	83.9	86.7	9.79	<0.01	77.8	77.8	76.9	75.9	0.03	1.00
Practical exams (standardised patients)	90.6	75.6	60.3	24.26	<0.0001	77.8	83.3	68.0	69.0	1.63	0.65
Written exams (requiring application of knowledge)	70.7	75.0	85.3	6.46	<0.05	77.8	57.9	84.6	82.8	5.33	0.15
Standardised patient interactions	89.2	76.3	52.9	30.77	<0.0001	77.8	78.9	73.1	70.4	0.51	0.92
Written assignments (overall)	62.1	75.9	84.8	15.73	<0.0005	77.8	63.2	76.9	69.0	1.27	0.74
Written exams (overall)	63.7	55.3	58.7	2.06	0.34	66.7	42.1	69.2	72.4	5.17	0.16
Tutorial participation	56.6	56.3	60.8	0.60	0.74	100.0	47.4	69.6	75.0	8.76	<i>p</i> <0.05
Written exams (requiring recall of content)	54.8	47.8	55.2	1.96	0.37	55.6	36.8	50.0	51.7	1.35	0.72
Oral presentations (overall)	40.8	42.9	46.4	0.68	0.71	85.7	50.0	44.0	51.7	3.86	0.28
Oral presentations (individual)	42.7	40.8	47.9	1.22	0.54	71.4	43.8	33.3	48.3	3.26	0.35
Group tasks (overall)	39.8	39.5	35.2	0.56	0.76	66.7	52.6	38.5	48.3	2.37	0.50
Portfolios	29.2	40.6	48.1	7.48	<0.05	44.4	62.5	50.0	50.0	0.59	0.90
Written assignments (group)	34.7	45.3	30.1	6.32	<0.05	33.3	42.1	50.0	35.7	1.35	0.72
Oral presentations (group)	34.7	35.4	39.4	0.44	0.80	85.7	44.4	46.2	30.0	6.52	0.09
Online assessment/activities	29.2	28.7	45.5	8.87	<0.05	50.0	26.7	47.8	44.4	2.00	0.57
Multiple choice exams	34.1	30.8	41.9	3.47	0.18	44.4	10.5	34.6	28.6	4.65	0.20
Online exams	25.9	27.0	36.4	3.35	0.19	22.2	5.6	39.1	57.1	9.00	<i>p</i> <0.05

Addressing the lack of student support for assessments involving oral presentations, group tasks, online tasks, and multichoice exams is complex and is likely to depend on the individual assessment types themselves. Rather than simply explaining to students the advantages and disadvantages of these assessment types, however, perhaps the solution lies in improving their understanding of the underlying theory. An example of this is group oral presentations, which can see students “thrown into the deep end” with little to no knowledge of models of public speaking or teamwork, despite substantial literature being available on both.<sup>28</sup> Improving student knowledge in this regard could improve both their enjoyment of these tasks and their learning overall.

## CONCLUSIONS

Overall, the PT, OT, SP, and AUD students responded more positively to practical, individual and written assessments than to oral, group, portfolio, online and multiple choice assessments. The postgraduate students responded more positively to tutorial participation than did the undergraduate students; and the undergraduate physiotherapy students responded more positively to practical exams (standardised patients) and standardised patient interactions, and the undergraduate speech pathology students



responded more positively to written assignments (overall), than did the undergraduate students from the other disciplines. Matching assessment tasks to student group is warranted if greater student satisfaction is to be achieved. Methods of improving assessment were discussed, including improving student knowledge of the theories underpinning each type of assessment.

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