Irish Medical Science Education: An Exploration of the Experiences and Attitudes of Undergraduate Students with Respect to Assessment Practices.

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Abstract

Assessment is a driver of learning and shapes the approach and the depth of learning that takes place. When a programmatic approach to assessment is adopted, that includes a formative assessment strategy, what can result is enhanced skills and competencies on the part of students. Presented in this paper is part of a larger research study into the assessment practices in the education of undergraduate Medical Scientists in the Irish context. Ireland boasts three Institutes that each offer a level 8 degree programme in Medical Science. To fully understand the assessment practices of these programmes, an insight into the reflections of the students involved is required. The aim of this phase of the study is to report the student experiences and attitudes with respect to assessment on these three programmes. All students registered on the programmes during 2017/2018 academic year were invited to complete an online anonymous questionnaire. The questionnaire containing both open and closed questions, sought information on: the types of assessment students had experienced, their assessment preferences, their familiarity with linguistic terms associated with assessment, and their attitudes on feedback. One hundred and seventy-two students responded to the questionnaire, with an equal distribution for each year of study. The results analysis showed a diverse range of assessments have been experienced by the students in each institute. Students prefer short answer questions with the higher year students displaying an understanding of the depth of learning involved. There is a gap in feedback practice between what students receive and what they would prefer. The investigation of the understanding of assessment terminology demonstrated low levels of assessment literacy in this student population. Students recognised the benefit of assessment as a driver of engagement but referred negatively to the scheduling and weighting accompanying some assessment activities

1. Introduction.

Assessment is a driver of learning and shapes the approach and the depth of learning that takes place (Gibbs, 2010). Assessment in Higher Education (HE) has been demonstrated to play a key role in learning and in the approach students take to their studies. (Rust, 2002; Brown, 2004; Boud and Falchikov, 2006; Bloxham *et al.*, 2011; Carless, 2014; Race, 2014; Carless and Zhou, 2015). Adopting a structured programmatic approach to assessment offers a number of advantages to both students and staff as presented by Tomas and Jessop, in their review, they demonstrated the importance of a programmatic approach to assessment that has a balance between summative and formative assessment (Tomas and Jessop, 2017). This programmatic approach, they argue, will result in an increased emphasis on 'learning' and less focus on the attainment of grades.

In the Republic of Ireland (RoI) there are three professionally accredited B.Sc.(Hons) programmes that graduate Medical Science professionals; Dublin Institute of Technology (DIT), Cork Institute of Technology and University College Cork (CIT/UCC) and Galway Mayo Institute of Technology (GMIT). These graduates are employed primarily in clinical laboratories performing the analysis of clinical samples that aid the diagnosis and treatment of patients. It is expected that in 2019 Medical Science will become a CORU[1]-registered profession. The educational institutes delivering programmes for this profession must include assessment strategies that assure graduates of the programme meet both the academic institute's learning outcomes and the professional competencies as defined by the registration body, CORU. There is a limited body of research publications in the area of Medical Science education in Ireland and this study will serve to bridge that gap.

As a starting point for the development of a structured programmatic approach to assessment within these programmes this paper reports on the attitudes and experiences of current

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[1] CORU is the Irish state registration body for Health & Social Care Professionals. It comes from the Irish word for fairness – cóir.

Medical Science undergraduate students with respect to assessment practices. The objectives of this phase of the study are:

- To review the attitudes of the students to the assessment methods they have experienced.
- To enquire as to the students' experience of feedback and what their preferences are.
- To investigate the assessment literacy of these students.
- To enquire as to students' thoughts on what they might change with respect to assessment.

Methodologically a mixed methods approach was undertaken, using an anonymous online questionnaire (Appendix). All students registered on the three professionally accredited B.Sc. (Hons) programmes for 2017-2018 were invited to participate in the study (n=387). Both qualitative and quantitative data was collected and analysed, and a distillation of these findings are presented here.

This paper first provides an overview of assessment research in HE, and outlines the context of this research study, namely, medical science training in the Irish context. Literature research and the primary research methodology and methods are outlined, discussed and justified, and the research findings, conclusions and recommendations are presented. The paper then concludes with some findings and observations that will shape the next phases of the research.

1.1 Assessment in HE and study context.

Assessment is a key component of all programmes in HE, it functions as a way of measuring the achievement of academic standards in the granting of awards or in permitting progression within a programme, this is generally referred to as the assessment OF learning. However, it is also widely accepted that assessment has an invaluable role as a learning tool. "Assessment Of, For and As learning" is a major theme in published work in the area of Teaching and Learning in HE in the last decade (Boud, 2003; Boud & Middleton, 2003; Bryan & Clegg, 2006; Hernández, 2012; Taras & Davies, 2013; Bloxham, 2015). Taras (2008) states that assessment and learning compete for the position at the top of the educational experience and Biggs (2011) refers to assessment being the "senior partner in learning and teaching".

Students consider assessment to be what is important and use the assessment strategy of a module or a programme as a guide on how to structure their study, to decide what to study and to determine the depth of knowledge required of them (Rust, 2002; Gibbs et al., 2003; Gibbs & Simpson, 2004; Bryan & Clegg, 2006; Gibbs, 2010; Race, 2010). As such a programme's assessment strategy, will play a key factor in the learning that occurs. We also need to incorporate into our undergraduate programmes the opportunity for students to develop key skills, skills that will be of benefit to them after graduation as they continue their learning (Knight, 2000; Knight, 2006; Tai et al., 2017). The use of more formative assessment methods is one way we can do this, assessment 'as and for' learning should be integral to a programme's assessment strategy (Yorke, 2003; Schuwirth & Van der Vleuten, 2011). This would allow the development of graduate attributes such as the ability to be able to self-evaluate; a knowledge of the quality of their own work, a trait that will be expected in a professional workplace (Boud & Falchikov, 2007; Boud et al., 2015; QAA, 2015).

William (2013) quotes Guy Claxton in that we should be developing our students' "nose for quality" and similarly Sadler (1989) refers to the student having a concept of the quality of work similar to that of the teacher. Tai et al (2017) stress the importance of students developing the ability to know the quality of their own work and of the work of others, 'evaluative judgement' and that to accomplish this varying assessment methods are recommended. Scott and Fortune (2013) as part of a Formative Assessment Led Learning Strategy (FALLS) developed to support academics in the Built Environment recommends 'addressing the students' conception of assessment'. Students, he suggests, should understand the different functions of assessment, reiterating the importance of a programmatic approach to assessment.

It is important that a programme adopts a holistic and structured approach to assessment, ideally with students being able to apply lessons learned in one module or year of study as they move forward within the programme (QAA, 2015). Similar to the model outlined by the National Forum for the Enhancement of Teaching and Learning in Higher Education (2017a) a horizontal and vertical integration of assessment can allow a balance of assessment of, for and as learning to occur. Diverse assessment methods in a programme can be of benefit allowing inclusion and supporting different learners (Scouller, 1998; Bloxham and Boyd, 2007; Hernández, 2012). The diversity used must not undermine the learning or cause confusion

amongst students, but should enhance the learning. Ideally these are embedded in a scaffolded way to allow programme Learning Outcomes (LO; graduate attributes) to be developed (Bryan & Clegg, 2006; Bloxham & Boyd, 2007; Scott & Fortune, 2013; Tomas & Jessop, 2018).

The feedback that students receive on an assessment activity, be it formative or summative assessment, has a major influence on the learning that takes place (Hattie, 2007; Price et al., 2010; Pitt & Norton, 2017). The critical position of assessment and feedback would indicate that attention should be paid to the design, execution and timing of all assessment activities within a module and a programme, thus allowing students to receive timely, effective feedback than can have a feedforward effect (Brown, 2004; Race, 2010; Scott & Fortune, 2013). In the United Kingdom (UK) the National Student Survey (NSS) scores regarding feedback are consistently used to support student's dissatisfaction with feedback (Blair et al., 2014; Winstone et al., 2016). In 2016 and 2017 the Irish Survey of Student Engagement (ISSE) reported approximately 30% of student respondents scored that they received prompt and detailed feedback "quite a bit" (ISSE, 2018) Mulliner and Tucker (2017) discuss how on one side those delivering feedback argue that they deliver timely and appropriate feedback to students yet students express dissatisfaction with feedback; there is an obvious disconnect between those that receive and those that deliver feedback (Bohnacker-Bruce, 2013). The assessment and feedback literacy of students can be one barrier to the implementation of feedback, Carless and Boud (2018) outline a conceptual framework to improve student feedback literacy so that students can utilize feedback, Winstone and Nash (2017) discuss the shared responsibility in the engagement and subsequent application of feedback, noting the importance of feedback having a 'feed forward' effect.

1.2 Medical Science education.

Medical Scientists are professionals who work primarily in clinical laboratories. Responsible for performing the analysis of clinical samples that aid the diagnosis and treatment of patients. The title "Medical Scientist" is protected under the Health and Social Professionals Act 2005 and to be able to use this title entrants must meet the specific requirements of their competent authority or registration board.

In the Republic of Ireland the Academy of Clinical Science and Laboratory Medicine (ACSLM) currently accredits the professional requirements of the educational programmes for medical scientists, this accreditation of a programme allows graduates of that programme to enter directly into the profession.   There are three such programmes in the Republic of Ireland, delivered in Cork Institute of Technology /University College Cork (CIT/UCC), Dublin Institute of Technology (DIT) and Galway Mayo Institute of Technology (GMIT). The learning outcomes (LO) of these programmes require a balance of knowledge, skills and competency therefore it is expected that educators create a learning environment for this to occur. The programmes must deliver an appropriate balance of theory and practice and the assessment methods used must be aligned to both the professional and academic requirements (Schuwirth & Van der Vleuten, 2011).

The Medical Science profession, in the Republic of Ireland, is currently undergoing some significant change, in 2019 practicing Medical Scientists will be required to register with their state registration board overseen by the registration body CORU. The criteria and standards of proficiency for educational institutes delivering programmes for medical scientists have recently been published. These guidelines state that the programme's assessment strategy must ensure the assessment of learning outcomes and "effectively facilitate progression decisions and the achievement of the standards of proficiency" Formative assessment may be part of this strategy but the CORU guidelines state that summative assessment be used to make decisions on progression (CORU, 2018). The programme providers therefore will have to ensure that their assessment strategies are in line with the requirements of the registration body.

The research presented here is very timely, the current practices and the student attitudes and experiences of same can be used to inform the design of future assessment strategies for these programmes.

2. Research Methodology.

The research presented here is part of a larger study into assessment in Irish Medical Science education. Overall, a mixed methods approach was taken for this study with both quantitative and qualitative data being recorded. Mixed methods was deemed the most appropriate methodology for this exploration into the experiences and attitudes of students on the

programmes and both quantitative and qualitative data was gathered and analysed, offering a balance between the two techniques (Tashakkori & Teddlie, 2010).

Following ethical approval covering all three institutes, a nominated staff member in each institute agreed to distribute the online questionnaire to all registered students on the Medical/Biomedical Science Level 8 programme.

The experiences and attitudes of all students registered on the three programmes in the Republic of Ireland were gathered using an online anonymous questionnaire (Appendix A). Students were asked to report on their preference of assessment methods and to give a reason for their choice; to express their preference for the type of feedback and offer an explanation as to why they prefer it. There were some questions posed to gain an insight into students' literacy in the 'language' of assessment. The questionnaire also included two open-ended questions asking student what "they liked about assessment" and also if they "could change something about assessment what would that be?" Data was collected in the second term of the academic calendar, so as to allow first year students time to have had some exposure to assessment at third level.

Students from all three institutes responded to the online questionnaire and in total 172 completed responses were received (44% response rate). All responses are included in the findings presented here. There was an almost equal distribution between the number of respondents on each of the four years of the programmes.
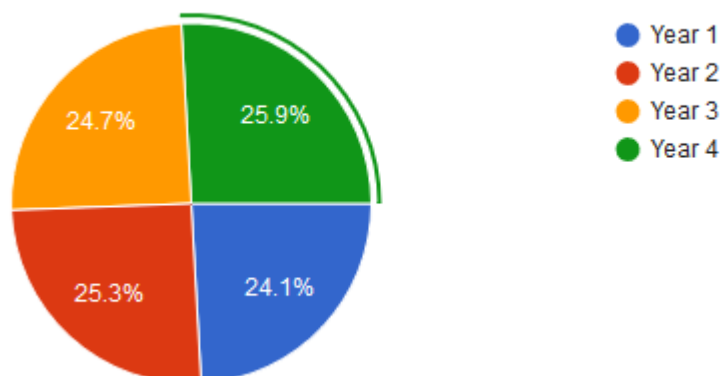

Figure 1- Breakdown of the distribution of respondents by year of study

Reflective of the demographics of the student population and similar to the gender breakdown in the profession 82% of the respondents were female.

Thematic analysis was performed on the data using NVivo software, the following section presents a distillation of the main findings from the completed questionnaires.

3. Research Findings.

Presented here are the main findings from the student questionnaire. For the three accredited programmes the attitudes of the students to the assessment methods they have experienced, students experience of feedback and their preference for feedback is presented. The assessment literacy of these students and their thoughts on what they like and what they might change with respect to assessment are also presented.

3.1 Assessment methods – student attitudes and experiences.

The first section of the questionnaire dealt with assessment methods. At first students were asked to choose from a list the assessment methods that they had experienced, this list was developed form a previous study of assessment practice of one of these programmes (Mc Grath *et al.*, 2017).

As a Medical/Biomedical Science student what assessment methods have you experienced?
Check all that apply.
Quiz (online/paper)
MCQ
Short Answer questions
Essay
Poster
Group Project(s)
Problem Sheets/ calculations/data analysis

Presentations

Case Study

Abstract writing/ scientific paper writing

Practical reports/exam

End of module exam/ Final exam

Interview/Oral examination

Other:

As can be seen in Figure 2 a diverse range of assessment methods have been experienced by students.
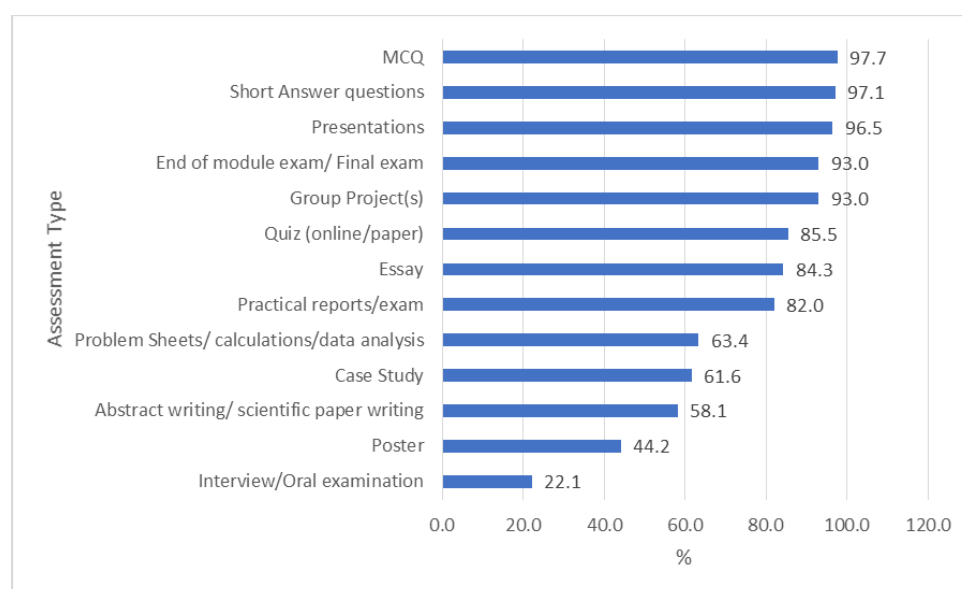

Figure 2 - The distribution of assessment methods experienced by student respondents to the questionnaire.

Using the same list students were then asked to choose their **most** and **least** preferred assessment method and to explain their reasons for doing so.

Which of these is your MOST preferred method of assessment?
Briefly explain why this is your most preferred assessment method

The results to the questions on which assessment method students **most** and **least** prefer are presented in Table 1.

No.	Most preferred assessment method (%)n=172	Least preferred assessment method (%) n=168
1	Short Answer Questions (31.4)	Presentations (18.5)
2	Multiple Choice Questions (22.1)	Multiple Choice Questions (17.9)
3	Essay (9.9)	Group Projects (16.7)
4	Quiz (8.7)	Essay (15.5)
5	Case Study (8.1)	Exam (12.5)

Table 1 - The top 5 most and least preferred assessment methods listed by respondents.

As can be seen in Table 1 there is an almost equal distribution in % assessment methods that students least prefer but the 2 most preferred assessment methods (Short Answer Questions (SAQ) and Multiple Choice Questions (MCQ)) are chosen by just over 50% of respondents. When broken down by year of study, SAQ was chosen by 28%, 32%, 17% and 22% of years 1, 2, 3 and 4 students respectively. However, 34% of respondents that stated MCQ as their most preferred choice were in the first year of their study.   Almost 10% of the students chose Essay as their most preferred assessment with 82% of these being year 3 and year 4 students.

3.2 Feedback – students' experiences and preferences.

The next section of the questionnaire dealt with the students' experience of feedback and their feedback preference. Questions posed included:
How do you receive feedback? (tick all that apply)
Which type of feedback do you prefer to get?

Figure 3 is an illustration of the responses to these two questions. There appears to be a gap between current practice in feedback delivery and how students would prefer to receive feedback. The use of general feedback or class discussions is common practice with 75% of students receiving this type of feedback, however only 19% prefer this as a feedback

mechanism. Students would prefer to have the opportunity to discuss feedback one to one with staff.
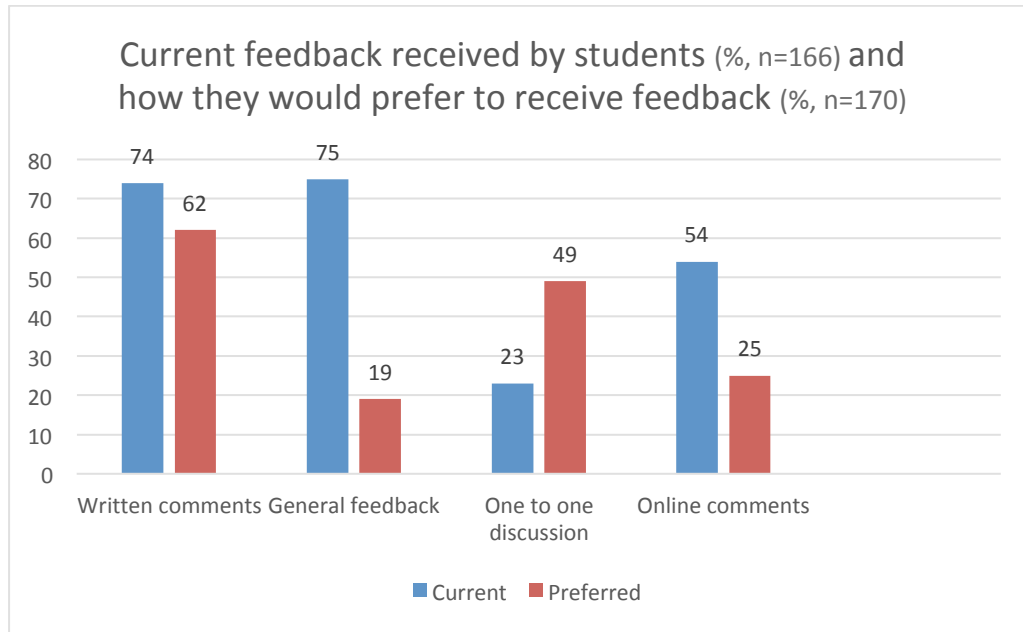

Figure 3- Comparison of the current feedback received by students and the feedback methods that they would prefer to receive. (3 students replied that they currently didn't receive feedback)

Students were also asked: Can you please briefly explain why you prefer to get this type of feedback? As demonstrated in Figure 3 written comments are the most preferred feedback delivery method for these students, some of the reason given for this are:

> *'You can see exactly what went wrong and what you should have done. It's more accurate to me and my work.'*

> '*Written comments on the paper are helpful because it is clear what you got wrong'*

> *'It feels more personal, more like the lecturer took the time to read and assess the written work. It's also easier to highlight the areas of feedback on a hard copy.'*

> *'It relates to you specifically and private.'*

The second more preferred feedback method is one to one discussion. A sample of student comments on 'on- to-one discussion' feedback are:

> *'You can ask direct questions to the lecturer.'*

> *'…would prefer this feedback as it would help me to understand the exact thing I am doing wrong and it would help me bring up problems I feel like I have with the learning / labs etc'.*

> *'More personalised and individually offers criticism specific to me rather than how the class got on as a whole.'*

Of those that responded to the questions 79% of students stated that they find feedback they receive useful (see Figure 4) and over 56% use feedback between modules (Figure 5).
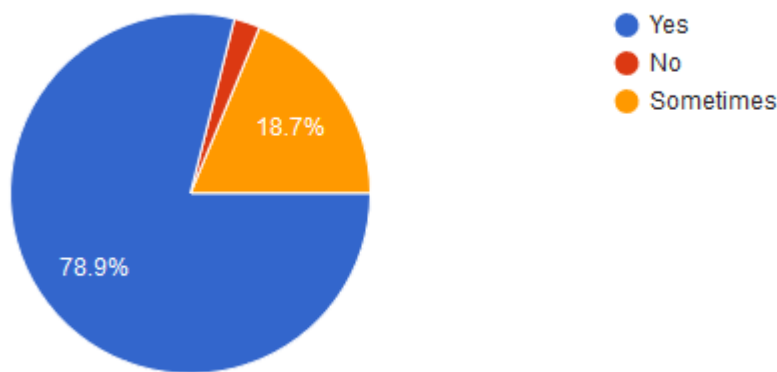

Figure 4 student responses to 'Do you find feedback useful?' (n=171)

When students were asked: Can you explain why feedback is / is not helpful to you? Students generally referred to feedback as offering a way to improve or see where they went wrong. Below are a representation of the student comments on feedback:

> *'Points out where to improve, and how to improve. Also highlights what you did well.'*
> *'You can see exactly what went wrong and what you should have done.'*
> *'Feedback is helpful when constructive, unhelpful when lecturers imply that we don't know the material enough'*
> *'Tells me where I went wrong and where I can improve next time.'*

The qualitative data collected clearly demonstrated that feedback was seen as the mechanism by which grades can be improved. Students would like feedback to be more than just the

grade and would like the feedback to be clear and applicable to their work. Assessment literacy and agreed understanding of the language of assessment was investigated in the next section of the questionnaire.
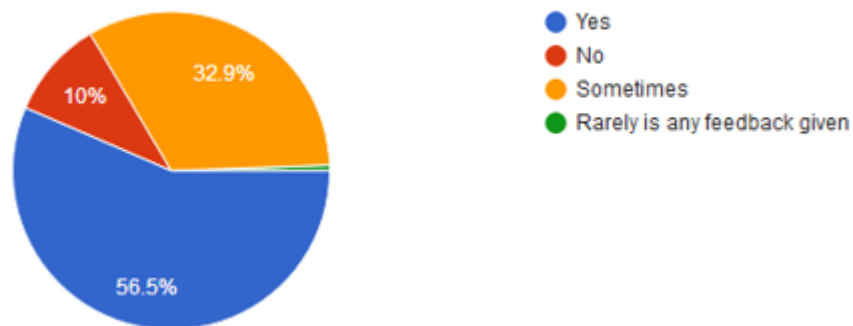

Figure 5 responses to Do you ever use the feedback that you received in one module to help with assessments in other modules? (n=170)

3.3 Assessment literacy.

When asked to explain the terms associated with assessment it is very clear that there is poor assessment literacy in this cohort of students. There was little evidence of understanding of the terms formative and summative. Students entered 'don't know' 'unsure' or didn't answer these questions, of those that did submit an answer they generally referred to formative as 'continuous assessment' i.e. assessment throughout the term and summative as the assessment at the end of term. One student did define formative assessment as "*Not given marks but shows understanding of topic*" and summative as "*Marks are given and cumulative goes towards overall CA mar*k" The next question that was posed was to determine if students are familiar with the term assessment criteria.
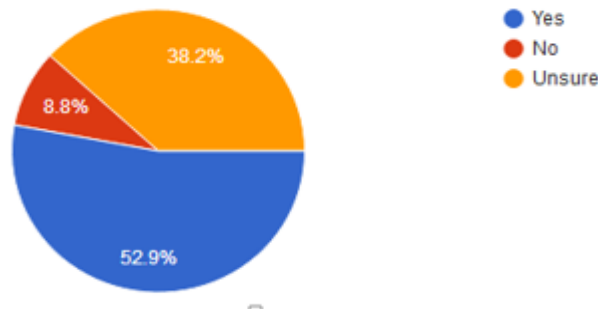
Figure 6 Results from the question ' Do you understand assessment criteria?' (n=170)

Just over 50% of the students answered 'yes' to indicate their understanding of assessment criteria. When asked to explain their understanding, students seemed to think of criteria more in the way of the logistics of the assessment: 'what needs to be done', what 'I have to do to get the marks' or what 'material is being covered'.

> *'It gives an indication of what is to be done or included in an assessment so as to obtain marks.'*

> *'What is required to get a certain grade in an assessment.'*

> *'The information that will appear on the assessment, what you need to know in order to do well e.g. topics that will be covered, question formatting and style.'*

> *'It is the topics and course content being examined in the assessment.'*

A small minority of students refer to assessment criteria in relation to demonstration of knowledge or understanding of the material.

> *'It is how you will be judged when performing an assessment. How the marks will be allocated'*

> *What knowledge is required to pass the exam.'*

It is clear that the majority of students link performance in an assessment to the achievement of marks and there is not agreement on the understanding of assessment criteria. The next section of the questionnaire dealt with the students' comments on assessment.

3.4 Student comments on assessment.

The two open questions at the end of the questionnaire asked students 'what they like about assessment' and what they would do if they 'could change something about assessment' Students indicated that assessments encouraged them to study and to engage with material.

They would like to see assessments more spaced out and to possibly have more lower stakes assessment. The timing of assessment featured very strongly with students expressing dissatisfaction with having a number of assessments in the same week, clearly demonstrating the need for a programmatic approach to not just the type of assessments but to the scheduling of these activities also.

>*'Make you study prior to the final exam, means all the work isn't left to the last minute.'*

>*'Keeps you engaged with notes/study throughout the year.'*

>*'Less weighted assessments, like 2% or 3% assessments, so there's less pressure'*

>*'I'd like to see lecturers better coordinate together to avoid close scheduling of assessments.'*

>*'Have them less frequently. I feel as though there is some sort of assessment at least every week which can be very difficult and stressful. There is never a more relaxing time during the term'*

>*'Clear, concise details on assessment, given deadline long in advance.'*

>*'Reduces pressure on final exam sitting- can gain marks over time as opposed to one large exam.'*

>*'More continuous assessments and less emphasis on final assessment.'*

A small minority of students did refer to the role of assessment in demonstrating to themselves how they are performing. The positive emotions associated with doing well are also mentioned:

>*'It allows you to get some satisfaction out of how much work you have put in and give so an overall measure of where you are at in comparison to others.'*

>*'A good mark in an assessment shows how much I've learned.'*

Students recognise the role of assessment in driving learning but suggest changing the timing and weighting of some assessments.

4. Analysis and Recommendations.

The following is an analysis of the findings from an exploration of the experience and attitudes of undergraduate students with respect to assessment, on three professionally accredited programmes in the Republic of Ireland.

4.1 Assessment methods – student attitudes and experiences.

Similar to the published profile of assessment practices in Irish HE by the National Forum for the Enhancement of Teaching and Learning in HE (2017b) students are exposed to a large number of assessment methodologies. When their preference of assessment was reviewed there were two assessment activities that were chosen by 54% of the students that responded; SAQ and MCQ (Table1). The reasons supplied for choosing these methods demonstrated that students referred to these methods as giving the best opportunity to demonstrate their knowledge and in relation to MCQ students described them as clear and concise. Students like these assessments as they see them as the best opportunity to gain marks.

> *'If you study the material the short answer questions are the best possible chance of maximising marks' (SAQ)*

> *'Short and concise answers are easier to give while under pressure/ (SAQ)*

> *'Either know the answer or not' (MCQ)*

> *'It's quick and easy way to find out if you know the material before the final exam….find them to be not as stressful as other methods.' (MCQ)*

These comments demonstrate an association with assessment as a measure of what has been learned (Assessment OF learning) and a way of achieving marks. Essay was chosen by 10% of the students and the majority of these students were in year 3 or year 4 of their studies, the comments associated with the reason for choosing this were more in line with seeing assessment as a means of learning - Assessment "as and for" learning.

> *'…allow you to do further reading and gain more understanding and connect modules.'*

> *'Like having time to research the topic and manage my learning.'*

This finding is thought provoking and shows that as the students have progressed through the programme their appreciation and understanding of the depth of knowledge required has evolved.

On review of the assessment methods least preferred by students there was almost equal distribution between the top 5 (Table 1). The reasons students highlighted for not liking certain assessment methods appeared to be associated with how the methods are used – group projects and presentations are not liked due the marks being awarded can be influenced by factors other than knowledge of the material. This again reinforces the theme that these students generally see assessment as a measure of knowledge, as a way of getting marks and do not like if the assessment marks are dependent on others or on how you present.

> *'Being good at presenting does not necessarily mean you understand the material well…'*

> *'May get marked down for another person's fault.'*

> *'Don't like negative marking'*

It is clear from the data that these students have, as Jessop and Tomas (2017) describe, a grade-orientation attitude towards assessment and do not generally see the role of assessment 'as' or 'for' learning. The following section presents an analysis of the findings on students experience and preferences regarding feedback practices.

4.2 Feedback – students' experiences and preferences.

Feedback is probably the most important factor in determining the learning that occurs from an assessment activity. Feedback is only effective if those that receive it can understand it and apply it (Hattie, 2007). Previous studies report a divide between students' perceptions of feedback and lecturers' perspective on feedback delivery (Blair et al., 2013; Mulliner & Tucker, 2017). In this cohort of students there appears to be a gap between how students receive feedback and how they would like to receive it (Figure 3). In particular, the use of general feedback in class is how 75% of students have received feedback but only 19% prefer this type of feedback. It is clear that students would prefer to receive more 'personalised' feedback and would appreciate the opportunity to discuss their performance with the lecturers,

reinforcing the much published theme of feedback as a dialogic process (Maguire & Delahunt, 2017; Carless, 2018). A positive finding is that students do find feedback helpful and that they apply feedback across modules this will be explored further with the academic staff in the next phase of this research.

When the qualitative comments regarding feedback were analysed it was clear that students viewed feedback as a mechanism of pointing out deficiencies in their work, how they lost marks and how they can improve, an overall negative tone was associated with feedback (Nash &Winstone, 2017; Winstone, Nash & Rowntree*, et al.*, 2017). There was a very small number of students that commented on the feedback being a positive reinforcement of what they know or where they are situated with regards to their own learning.

> *'It gives me an indication of how well I understand the content.'*

> *'It allows you to get some satisfaction out of how much work you have put in and give so an overall measure of where you are at in comparison to others.'*

Perhaps the academics in these programmes may need to review how feedback is framed? It will be worthwhile investigating this further when the academic staff are surveyed and interviewed. The next section of this paper deals with the assessment literacy and the shared understanding of terms associated with assessment.

4.3 Assessment Literacy.

In order to engage with assessment and feedback it is important that staff and students are all familiar with the language of assessment and that they have a shared understanding of the terms being used. Formative and summative assessment are terms that appear widely in published work on assessment. Mc Dowell et al. (2009) refer to the confusion that exists regarding assessment terminology. It was very clear from the data that the majority of students are not familiar with these terms, formative assessment is seen as assessment throughout a module and summative at the end of a period of study. As so many students are not familiar with these terms it will be worthwhile investigating if academic staff on these programmes use these terms with students and in fact if staff themselves are familiar or have a clear understanding of the terms.

Students referred to assessment criteria as 'what needs to be done' it appears that again students see the criteria as the definition of how to achieve marks but are they associating this with learning? The assessment criteria are often described by these students as what needs to be done or in a manner as to the format/ logistics of the assessment activity, there are very few students that clearly understand what is meant by assessment criteria.

4.4 Student comments on assessment.

When asked what they like about assessment it is clearly obvious that students like the idea of having assessments throughout the course of their study reinforcing the role of assessment as a driver of learning (Boud, 2003; Boud & Middleton, 2003; Bryan & Clegg, 2006; Hernández, 2012; Taras & Davies, 2013; Bloxham, 2015). The students see the benefit of assessments as a driver of engagement and a motivating factor to study the module material. Students would like to see more frequent lower stakes assessment to encourage engagement and reduce pressure. Although student workload and assessment burden is often cited as a negative outcome of assessments it would appear that these students are expressing their need for a more formative approach to support their learning (National Forum for the Enhancement of Teaching and Learning in Higher Education, 2017b; Tomas& Jessop, 2018). By asking for more frequent assessments with lower stakes they are asking for a mechanism to engage with material and a means to gauge their performance "assessment as and for learning"; the use of more formative assessments in these programmes is one way to meet this need. Students refer to the positive aspects and the reassurance that doing well in an assessment can have. The role that assessment has in developing self-evaluation skills is key to the attainment of the ability to be able to self-regulate learning during and after their undergraduate degree (Boud, 2003). A minority of students in this study referred to this although a small number it is a starting point and is something that can be built upon.

5. Conclusion.

This is the first step in a larger study into assessment practices in three medical science programmes, in Ireland. The overall aim of the larger study is to develop a framework for the structured inclusion of effective formative assessment methodologies in medical science. The data presented in this student-perspective study demonstrates that students see the benefits

of assessment as a driver of learning.   Students have clear preferences of assessment methods with the higher year students displaying an understanding of the depth of learning involved when discussing their reasons for their assessment preference. There appears to be a gap in feedback practice between what students receive and what they would prefer; feedback from a student perspective is seen as a way of improving work and grades. In general, students demonstrated low levels of assessment literacy; they are generally not clear as to the meaning of formative or summative assessment and prefer to refer to criteria in relation to the attainment of marks. There is, therefore, some work to be done to increase the understanding of assessment terms in the student population when developing an assessment framework. Students recognise the benefit of assessment as a driver of engagement but referred negatively to the scheduling and weighting accompanying some assessment activities. A programmatic framework approach to assessment practice and to assessment scheduling can help address some of the negative experiences that these students have expressed. The next phases of the larger study will be to engage with the academic staff on these programmes to investigate their perspectives on assessment within the programme design, and from this develop a framework that benefits all stakeholders.

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Appendix

Medical/Biomedical Science Student Survey

I would be very appreciative if you could complete this survey detailing your experience of assessment as a Medical/Biomedical Science student. The survey should take less than 15 minutes of your time.

All responses are anonymous.

Thank You

Mary

I agree to allow this information be used as part of a research study into assessment methodology in **Medical Science. I understand that my participation is voluntary and I** can **withdraw from the study at any time. Thank You** *

Mark only one oval,

Agree

Disagree

2. Are **you?**

Mark only one oval.

Male/Female

3. **What institution do you attend?** *Mark only one oval.*

CIT/UCC

DIT

GMIT

4. **What year of the Medical/Biomedical Science programme are you currently in?** *Mark only one oval.*

Year 1

Year2

Year3

Year4

5. How would you describe your overall attendance at college: *Mark only one oval.*

 I miss class / lab only when I am sick (>90 %attendance)

I attend most classes and all labs (60-90%)

I attend most classes and most labs (40- 60%)

J don't have very good attendance at classes / labs. (<40%)

Assessment - Your Experience and Preferences

6. Can you briefly explain what assessment means to you

7. **As a Medical/Biomedical Science student what assessment methods** *Check all that apply.*

Quiz (online/paper)

MCQ

Short Answer questions

Essay

Poster

Group Project(s)

Problem Sheets/ calculations/data analysis

Presentations

Case Study

Abstract writing/ scientific paper writing

End of module exam/Final exam

Interview/Oral examination

Other:

8. **Which of these** is **your MOST preferred method of assessment?** *Mark only one oval.*

Quiz (online/paper)

MCQ

Short Answer questions

Essay

Poster

Group Project(s)

Problem Sheets/ calculations/data analysis

Presentations

Case Study

Abstract writing/ scientific paper writing

End of module exam/Final exam

Interview/Oral examination

Other:

8. Briefly explain why this is your most preferred assessment method?

10. **Which is your LEAST preferred method of assessment?** *Mark only one oval.*

Quiz (online/paper)

MCQ

Short Answer questions

Essay

Poster

Group Project(s)

Problem Sheets/ calculations/data analysis

Presentations

Case Study

Abstract writing/ scientific paper writing

End of module exam/ Final exam

Interview/Oral examination

Other:

11. Briefly explain why this is your feast preferred assessment method?

Feedback

12. **Do you receive feedback on your assessments?** *Mark only one oval.*

Always

Sometimes

Never

13. **Do you find feedback helpful?** *Mark only one oval.*

Yes   –

No

Sometimes

14. **Can you explain why feedback is / is not helpful to you?**

15. **How do you receive feedback? (tick ail that apply)** *Check at/ that app/y.*

Written comments

One 2 one discussion with lecturer

 General discussion in class

 Online comments

Other

16. **Which type of feedback do you prefer to get?** *Check all that apply.*

Written comments

One 2 one discussion with lecturer

General discussion in class

 Online comments

Other

17. **Can you please briefly explain why you prefer to get this type of feedback?**

18. **When you have assessments returned to you, do you?** *Mark only* one oval.

Look at the mark only

Look at the mark first and then read any comments

Read/listen to feedback and maybe then see what mark you achieved,

Other:

19. **Do you ever use the feedback that you received in one module to help with assessments in other modules?**

Mark on/y one oval.

Yes

No

Sometimes

Other:

Assessment - General Questions

20. **What does .formative assessment' mean?**

21**. What is 'summative assessment'?**

22. **Do you know what is meant by assessment criteria? Mark** *only one oval.*

Yes

No

Unsure

Assessment Criteria Continued

23. **Briefly explain what you understand by assessment criteria.**

24. **Can you write one thing that you like about assessment and explain why?**

25. If **you could change one thing about assessment what would it be and why?**