

Architecture Students' Uptake and Use of Formative and Summative Feedback

Increasingly, attention is being turned toward the actions of students in relation to feedback. This paper presents the outcomes of a questionnaire study researching what undergraduate and postgraduate architecture students perceive as the purpose of feedback, how they use feedback on their coursework, and what makes them more likely to act on it. An overarching theme in their conception of feedback's purpose was that of a guide for improving coursework and learning. Two key dimensions that facilitated use over the longer term were feedback being generative and informing their working methods. The study revealed students engaging in a range of strategies with both formative and summative feedback to prioritise their next work; these could form the basis of facilitating wider adoption of these methods across the student body. There were similarities, but also substantial differences, between how undergraduate and postgraduate students reported perceiving and utilising feedback, which may have impact on feedback provision to enhance uptake and use. Whereas undergraduate students saw feedback's purpose in terms of directing improvement, postgraduates were more likely to see their own role in the process. Postgraduates were more likely to question feedback's validity over the longer term.

Keywords: feedback use; generative feedback; student perceptions; undergraduate students; postgraduate students

Introduction

Feedback is being seen less as a process of transmission of information from teachers and more as one involving students' actions (for example, Carless et al. 2011; Winstone, Nash, Rowntree et al. 2017; Esterhazy and Damşa 2019; Winstone and Carless 2020). If students do not engage with and act on feedback it is ineffective in supporting their learning (Gibbs and Simpson 2004; Price, Handley and Millar 2011), to the extent Carless and Boud (2018) maintain commentary only becomes feedback when

students utilise it to improve work or learning strategies. Zimbardi et al. (2017) found that the extent of students' engagement with feedback commentary impacted significantly on subsequent performance. Yet, whilst there is increasing consensus that students' actions in relation to feedback are critical to its effectiveness (Boud and Molloy 2013), engagement with feedback is often poor (Winstone, Nash, Parker et al. 2017). Students can remain inactive recipients of commentary or encounter difficulties utilising it (Winstone, Nash, Rowntree et al. 2017; Winstone et al. 2020).

Carless and Boud (2018, 1316) aver that using commentary effectively is a key dimension in student feedback literacy (Sutton 2012), for which they present four inter-related capabilities: appreciating feedback, making judgments, managing affect, and taking action. However, Molloy, Boud and Henderson (2020) suggest there is limited understanding of how students enact these capabilities.

In architectural education, tutorials and design reviews in the design studio are two core methods of formative feedback (developmental commentary during coursework before an assessed submission). Tutorials (also known as desk crits) most often occur as one-to-one dialogues between teacher and student (Goldschmidt, Hochman, and Dafni 2010), but can also adopt a small group format. This method was exemplified by Schön (1983) in his description of the reflective conversation between teacher and student. Design reviews (also known as crits or juries) are more formal discussions. Students present their work in the studio before a panel comprised of teachers, their peers, and often guest critics from professional practice, who respond with verbal commentary (Anthony 1991; Webster 2005). Collectively, tutorials and reviews provide a dialogic process that supports students' iterative development of their coursework.

Notwithstanding the efficacy of these methods being questioned (Webster 2004; Olweny 2020), including their objectification of the power differential between students and teachers (Webster 2007; Osborne and Crowther 2011), they remain the signature pedagogy of this discipline (Salama 2015; Carless et al. 2020) and other creative subjects (Orr, Yorke, and Blair 2014). Active engagement and participation with feedback is required just as much as any other aspect of learning (Rust, O'Donovan, and Price 2005), and Price, Handley, and Millar (2011) aver that feedback research should seek to identify factors that promote or inhibit engagement. Students and teachers can hold different conceptions of feedback's role in learning and its utility (Carless 2006; Adcroft 2011). This raises questions over how students in creative disciplines perceive and utilise commentary on their coursework where there is such a distinctive pedagogic process. Carless and Winstone (2020) highlight the value of students sharing their successes and challenges in eliciting, processing and using feedback information; without such understanding, teachers are blind to the consequences of their actions and cannot act to improve learning (Boud and Molloy 2013).

This paper presents outcomes of a study of feedback use by undergraduate and postgraduate architecture students at a post-92 UK university. The aim was to identify their perceptions and experiences of using commentary on their coursework, with the goals of understanding factors that impact on the utility of feedback commentary, and how it could be enhanced. The research questions sought to identify: what students perceive as the purpose of commentary, the relative utility of the different methods through which they receive it, how they use commentary, and what promotes and inhibits whether they do so or not. The outcomes suggest strategies and behaviours that can be nurtured to encourage broader proactive recipience (Winstone, Nash, Parker et al. 2017) and enhance student feedback literacy. Given the comparability of learning

and feedback practices with other creative subjects, this study will be relevant across the art and design subject area.

Context

The typical structure of architectural higher education in the UK is a three-year undergraduate degree (BA or BSc) followed by a two-year postgraduate degree (MArch). At this institution formative feedback is provided during design modules in both programmes at weekly tutorials; these are mostly conducted on a one-to-one basis, although some teachers hold these as small group sessions, particularly in the early stages of a project. Tutorials are interspaced with design reviews, typically at three- or four-week intervals. As well as design modules, there is also a theory module and a technology module in each year. Summative written commentary (feedback following an assessed item of coursework), is provided for every submission; this is typed into an Assessment Record sheet, and returned to each student through the virtual learning environment (VLE) with their grade. Most modules have two or more components, meaning that summative written commentary is often provided at more than one point in each module. Theory and technology modules are primarily taught outside the studio and have much less formative commentary, depending more on summative feedback for developmental progress between coursework submissions; these were included in the study as this could result in different approaches to feedback use across the curriculum.

This format applies across all three years of the undergraduate programme and both years of the postgraduate programme. All students have a half-hour tutorial or design review each week, and the same format of Assessment Record sheet is used across both programmes. They typically have nine tutorials, three or four design reviews and five items of summative written feedback per semester, with repeated opportunities to apply summative as well as formative commentary. The significant

majority of staff teaching and delivering feedback in the postgraduate programme also do so in the undergraduate. Therefore, whilst the depth and complexity of content will vary from level to level, the means and frequency with which students receive commentary has consistency across both programmes.

Methodology

Midway through the second semester of the 2018/19 academic year, students in all cohorts of the undergraduate and postgraduate architecture programmes ($n=266$) were administered with a short-answer questionnaire. Paper copies were issued at the start of a teaching session for each cohort and returned anonymously at the end of the session. The questionnaire had been independently reviewed by a member of the university's Learning and Teaching Academy, and the study approved by Liverpool John Moores University's Research Ethics Committee (19/LSA/001). Participants provided informed consent by ticking a box on the questionnaire, confirming they had read the Participant Information Sheet, which assured them the questionnaire was voluntary, they could stop at any time or leave out any question, and that responses would be reported anonymously.

The purpose of the questionnaire was to identify the perceived utility of different feedback methods, students' behaviours in using commentary on their coursework, and what they consider as barriers and catalysts to doing so. It asked which feedback method students considered to be the most useful and the least useful, and why; if they usually understand their feedback; what they would change to enhance their feedback's utility; what they perceive as the purpose of feedback; what they do with their feedback when they receive it; in what ways they utilise their feedback, both in the short term (on that piece of coursework), and the longer term (in subsequent modules); and what makes them more likely to act on feedback. Outcomes from questions relating to the

perceived utility of different feedback methods, if they usually understand their feedback, and what they would change to enhance its utility are published in Smith (2021).

The research sought descriptions of feedback's purpose because students and teachers can hold different conceptions of this (Carless 2006; Adcroft 2011), and identifying these may illuminate students' motivation for using it. Given the significance of students' actions in relation commentary to improving their learning (Boud and Molloy 2013), the need for greater understanding of students' capabilities in using commentary (Molloy, Boud and Henderson 2020), and the value of them sharing their experiences of doing so (Carless and Winstone 2020), the research investigated respondents' actions on receipt of commentary, including when and how they had used it. As engagement with commentary can be poor (Winstone, Nash, Parker et al. 2017), it asked what affects their motivation to act.

In summary, the participants' responses discussed here relate to the questions:

- 1) What do students see as the purpose of feedback?
- 2) What do they do with feedback they are given?
- 3) Do they revisit their feedback?
- 4) What makes them more likely to act on feedback?

The overall response rate was 64%, $n=169$. In the undergraduate programme the response rate was 59%, $n=117$ (First Year 52%, $n=46$; Second Year 69%, $n=40$; Third Year 60%, $n=31$); in the postgraduate programme the response rate was 76%, $n=52$ (First Year 74%, $n=32$; Second Year 80%, $n=20$). All responses were transcribed verbatim, creating a data set of 21,334 words; the average response to each short-answer question was 16.5 words.

The data set was analysed using inductive thematic analysis (Braun and Clarke 2006); a realist approach was taken, iteratively searching the experiences described by the respondents. Firstly, the transcribed questionnaires were read thoroughly to create familiarity. The responses were colour-coded, so that once collated into themes they could be referenced to which cohort they were from. This was particularly important given that the study includes undergraduate and postgraduate students; they will have different skills and experience and therefore may utilise commentary in different ways. The data was studied to inductively identify a set of codes, and each response was individually marked with the codes it associated with. The codes were then collated into candidate themes, under which the coded data extracts were grouped.

The codes and themes were established at the semantic level (Braun and Clarke 2006), although progressing beyond explicit descriptions of the responses, to interpret the significance of their broader meanings and implications. A thematic map was developed, with some codes combining within the thematic structure, and sub-themes were developed to clarify the structure within each theme. The 11 codes capturing the most salient aspects of the data became sub-themes, and are described in the findings, below. The other 25 codes coalesced under the relevant sub-themes through iteratively refining the thematic map. These were: accessibility; contradictory; detail; direction; discussion; feedback journal; ideas; irrelevant; jargon; knowledge; marks; motivation; not occurred; notes; perspectives; precedents; read; reason; remember; strengths / weaknesses; timely; tutor; understandable; valence; visual.

The author, who teaches on the undergraduate and postgraduate programmes, has previously conducted several qualitative pedagogic research projects using this methodology. As sole analyst, the codes were verified through repeated re-reading of the data to saturation, until there was strong confidence they identified all pertinent

aspects within the data set. The validity of the themes was tested by reviewing at both the level of the coded data and in relation to the original full data set. The data was analysed both across the codes and across the two programmes. This enabled a comparative analysis between responses from the undergraduate and postgraduate programmes against the thematic map.

Findings

The analysis identified three key themes in respondents' descriptions of commentary on their coursework (Figure 1). A guiding hand describes the purpose of feedback commentary, and includes the subthemes of formative improvement; future development; mistakes; and essay writing skills. Strategies for feedback use describes respondents' self-reported methods of using formative and summative commentary, and includes the subthemes of refer and reflect; collate, summarise and prioritise; and apply. Qualities for feedback use encompasses what respondents described as influencing the likelihood they utilised commentary on their coursework, and includes the subthemes of relevance; generative; agreement; and format and process.

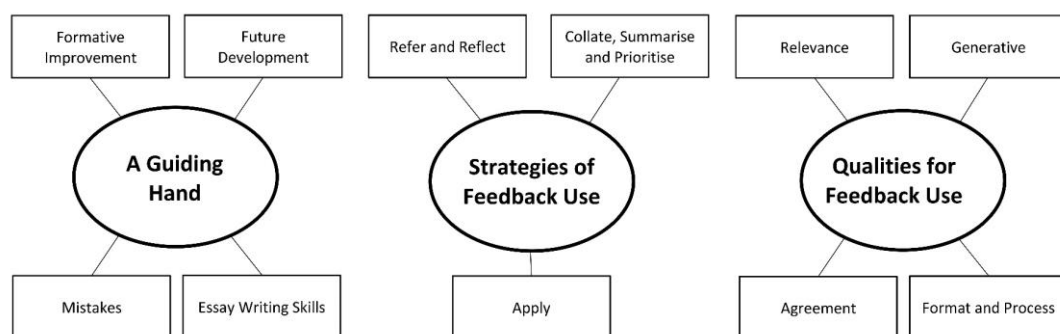


Figure 1: Thematic map, showing the three themes and associated sub-themes.

The vignettes provide representative examples from the respondents. Where there is similarity in the findings across both programmes, undergraduate and postgraduate responses are included; however, where there is significant emphasis

toward a particular view in either programme, examples from that programme are provided, thereby reflecting similarities and differences in the findings between the two levels of study.

A guiding hand

An overarching theme in respondents' descriptions of the purpose of feedback was that of a guide to developing their coursework and learning (Figure 2).

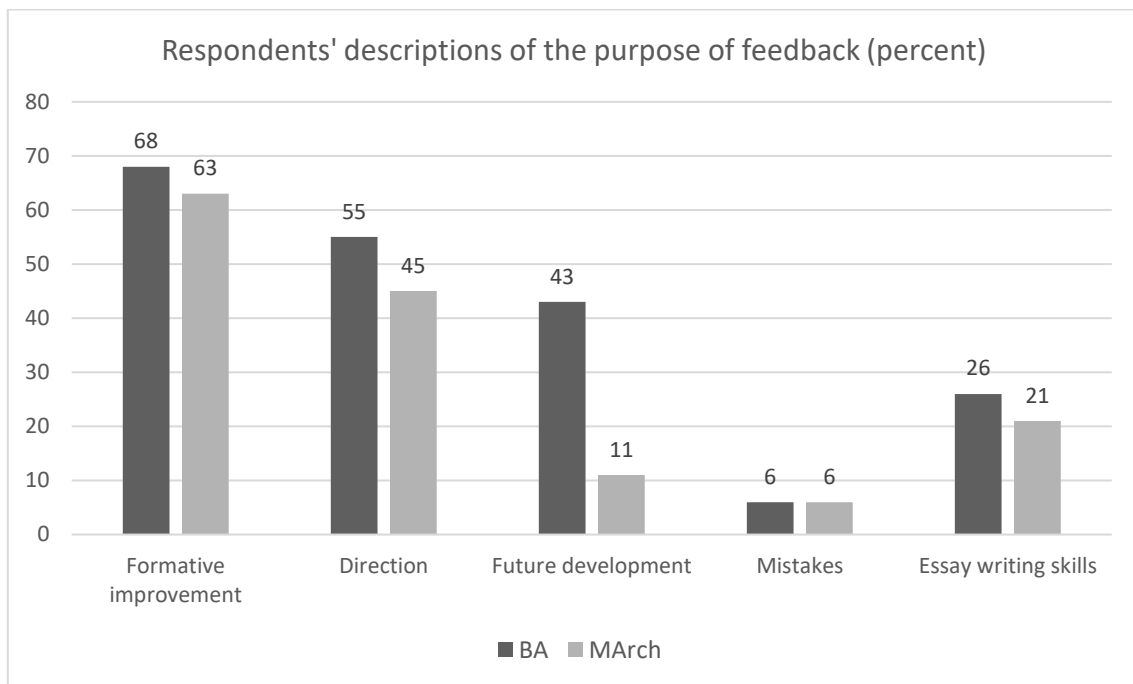


Figure 2: Respondents' descriptions of the purpose of feedback (percent).

Formative improvement

Respondents across both the undergraduate and postgraduate programmes included terms associated with improvement when describing feedback's purpose; the proportion was slightly higher in the undergraduate course than postgraduate (BA 68 percent, MArch 63 percent). Overall, two-thirds of respondents held this conception, as these responses illustrate:

The purpose of feedback should primarily be to point out points on which to improve on and how to improve.

Undergraduate student

To improve, and to have a clearer understanding on how you can develop ideas.

Postgraduate student

A larger proportion of undergraduate respondents than postgraduate described the purpose of commentary in terms of providing direction on improving their work (BA 55 percent, MArch 45 percent). Examples of this directional function included identifying the next stages of development, highlighting issues they had not noticed, and suggesting areas in which to progress:

I find the purpose to be able to come out of a tutorial with a clear direction in which to progress work in a way which will benefit the project.

Postgraduate student

To recognise any issues I had not noticed. To realise other options I'd not already explored.

Undergraduate student

Postgraduate respondents were more likely to describe their own role and initiative within the feedback process, and to see that they had an active part to play. As these respondents explain, this included triggering their creative process and developing self-criticality and reflection:

To create / develop ideas, spark the thought in students head. Opposed to being given the next step to do.

Postgraduate student

To help develop critical analysis of your own project. Tutorials and reviews can help you take a step back and give multiple perspectives.

Postgraduate student

Future development

A significantly larger proportion of undergraduate students described commentary acting in the development of their learning during subsequent modules and years of the programme. Only one-fifth of respondents who described commentary's purpose with reference to longer term application where in the postgraduate programme (BA 43 percent, MArch 11 percent).

To help us progress and use the feedback on the next module.

Undergraduate student

Help to develop my work to a better quality and standard for the final two years.

Undergraduate student

As the following respondents illustrate, commentary enabled undergraduate students to understand their strengths and weaknesses – revealing areas for improvement in future coursework – and to measure their progress over time:

The written feedback is especially useful when you move onto your next project as you know your weaknesses and can improve.

Undergraduate student

To see if there is any points that come up more than once / see if I have made progress.

Undergraduate student

Mistakes

Surprisingly few respondents described feedback's purpose as identifying mistakes or errors (BA 6 percent, MArch 6 percent). However, when asked if they revisited feedback from previous modules, the proportion who described doing so specifically to avoid repeating mistakes from previous submissions revealed a notable difference between undergraduates and postgraduates (BA 20 percent, MArch 2 percent). This suggests that undergraduates were more likely to revisit commentary to try to avoid repeating errors:

Yes, they allowed me to not make the same mistake as I did in a previous project.

Undergraduate student

Yes, I look at where I lost marks in the last project and make sure that in my new project I don't [sic] make the same mistakes.

Undergraduate student

Essay writing skills

A quarter of undergraduate respondents described utilising summative commentary from previous modules to help with a subsequent essay, with a slightly smaller proportion in the postgraduate course (BA 26 percent, MArch 21 percent). Notably, this went beyond issues such as referencing, grammar, imagery and format (although these were all cited as reasons for referring to previous commentary), and included progression at deeper levels, such as writing style, methodology and how to construct a critical argument. Understandably, First Year respondents described the value of previous commentary in coursework tasks they were unfamiliar with, and they particularly associated essay writing with this:

Yes, used feedback from the theory essay to help with the specialist study, to ensure I was going in the right direction, with focus, objectives etc.

Postgraduate student

Yes. How to critically argue in an essay / layout bibliography.

Undergraduate student

I have used previous feedback on essays to improve my essay work as I am new to essay writing and needed more help for this.

Undergraduate student

Strategies for feedback use

Across the undergraduate and postgraduate programmes, respondents recounted methods for using their feedback (Figure 3).

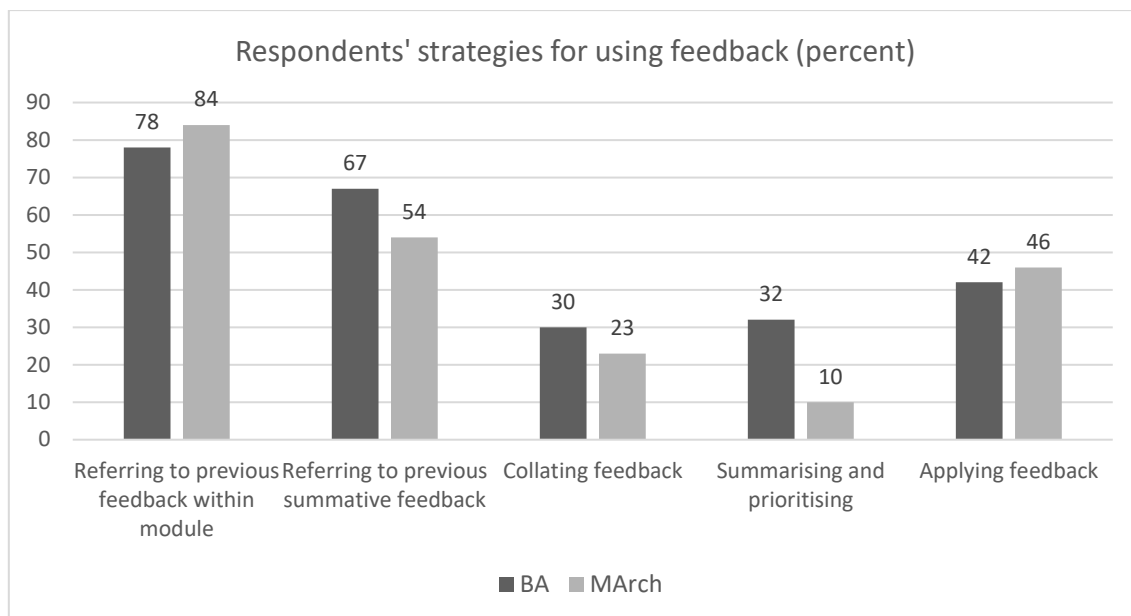


Figure 3: Respondents' strategies for using feedback (percent).

Refer and reflect

A substantial proportion of respondents recounted referring back to commentary during the course of a module, and this was slightly higher in the postgraduate course (BA 78 percent, MArch 84 percent). As these respondents illustrate, it served as a reminder of areas to develop in their work and to keep track of their design process:

Sometimes I will look back at feedback from previous reviews if they are in the same project. Normally to see if there is anything I omitted or forgot to mention

Undergraduate student

Sometimes it's necessary to identify where / when a project may of taken a wrong turn / path.

Postgraduate student

There was variation between undergraduate and postgraduate students in whether they described referring to summative commentary from a previous submission to help with a subsequent one (BA 67 percent, MArch 54 percent); the remainder said they had not or left no response. It served as a reminder of issues to address or aspects that worked well, and provided a source of ideas, different perspectives and precedents:

Sometimes I do to see how other feedback has changed my previous work and would allow me to view mine in a different way.

Undergraduate student

I know what to work on and what was successful in previous projects.

Postgraduate student

Sometimes, to see if something is a continuous problem, or to find architects / work which has been suggested before.

Undergraduate student

Referring back to commentary from a previous module had not occurred to some, or they had misplaced it, or had not remembered it was there. These respondents were predominantly in the undergraduate programme, with only two postgraduates commenting this way. Being asked whether they had referred to feedback from previous modules prompted some of these undergraduates, but no postgraduates, to reflect on the benefit of doing so, as these responses illustrate:

I do not but I need to in case I am receiving repeated criticisms.

Undergraduate student

No, however looking at the feedbacks from essays could help improve the next one.

Undergraduate student

Collate, summarise and prioritise

Just under a third of undergraduates and a quarter of postgraduates described collating their feedback (BA 30 percent, MArch 23 percent). This was done electronically, scanning hardcopies of formative design review notes and downloading summative assessment sheets, and as hardcopies, often in their sketchbooks. Respondents' motivation was to be able to refer to it, both in the short-term in relation to their current project, but also in the longer-term.

Keep them in sketchbook and refer back to them as the project develops.

Postgraduate student

Review feedback is used to direct my studies and make sure I'm on the right track; I keep these in my Design Journal for reference. Essay feedback is given and kept on my OneDrive to look at when I have to compose another piece of writing.

Allows me to directly improve on issues.

Undergraduate student

A more proactive strategy was summarising commentary, for example:

highlighting key points, rewriting it in their own words and creating to-do lists, and using it to prioritise their work ahead. Significantly, the proportion of respondents that described using this strategy at undergraduate level was three times that at postgraduate level, where only a small number described doing so (BA 32 percent, MArch 10 percent).

Reviews – rewrite highlighting any changes I would like to implement. Essay

feedback – read and then note areas which could have been done differently.

Undergraduate student

Highlight the key points – make notes on what to improve on / how. Or refer back to it when writing a new essay (for example).

Undergraduate student

Apply

Just under half of postgraduate respondents described strategies they utilised for applying commentary, with a slightly smaller proportion of undergraduates doing so (BA 42 percent, MArch 46 percent). In both programmes, commentary provided students with a guide to work from in their current or future coursework, including providing direction and setting structure or objectives:

Used to set objectives for iterative process.

Undergraduate student

I use it to improve work in future and as a guide and reference.

Postgraduate student

Others, also including respondents in both the undergraduate and postgraduate programmes, described proactively analysing their commentary before working from it:

Normally the routine goes: bullet point key points; follow with another bullet point on how improve it; then to a 5-10 min exercise on improving, sketching ... or something.

Undergraduate student

Break it down, identify what's relevant, what's not, what I do want to consider, what do I want to ignore. Write these up. Look at how I can change my design to suit it.

Postgraduate student

Qualities for feedback use

When describing the qualities that made them more likely to act on commentary respondents referred to both the content and the process through which it was received (Figure 4).

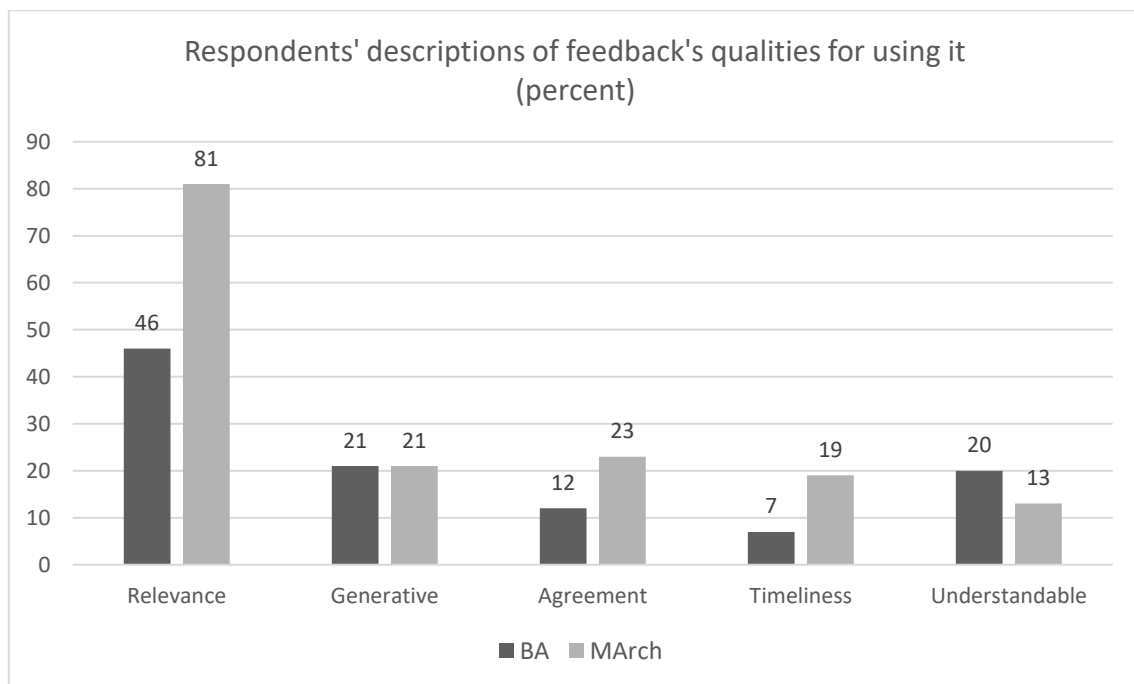


Figure 4: Respondents' descriptions of feedback's qualities for using it (percent).

Relevance

The most significant aspect of commentary being acted upon and whether it was utilised over the longer term was relevance; however, there was substantial variation in the proportion of undergraduates and postgraduates commenting on this (BA 46 percent, MArch 81 percent). Aspects of relevance included whether commentary built on existing work, was constructive and personal:

If it is constructive, and builds upon my existing work.

Postgraduate student

If it is realistic and relevant to my scheme and will make my project better.

Undergraduate student

I am more likely to act if it is more personally directed instead of generic comments.

Postgraduate student

Whilst postgraduates and undergraduates both described referring to previous formative feedback within a module, postgraduates were much more likely to question commentary's relevance beyond the module it was delivered within. They described it as potentially confusing and not making sense to use previous commentary, saw crossover as limited, and that doing so could curtail new learning:

Points raised in a previous project may not be relevant at all – that may lead to a more confusing development. Better to reflect on more recent feedback than superseded points that may now be outdated.

Postgraduate student

No, at the risk of 'repeating' any of my previous work. This might limit an opportunity to learn new things.

Postgraduate student

For respondents in both programmes, relevance extended beyond the module commentary was delivered within where it referred to their design process and skill sets,

or addressed issues similar to those they faced in subsequent coursework, as these responses illustrate:

Yes, I have taken aspects from previous design projects forward such as layout ideas, presentation techniques, drawings styles etc.

Postgraduate student

The feedback from reviews tends to be information that is valid for multiple projects along with providing reference points for the design process.

Undergraduate student

Yes. When I face the same problem / similar problem.

Postgraduate student

Generative

An intriguing quality that undergraduates and postgraduates equally described making them more likely to act on commentary was it being generative (BA 21 percent, MArch 21 percent). This encompassed suggesting new ideas and potential routes through which their work could develop, including teachers' sketches of these ideas, stimulating their creative thinking, and how alternative perspectives enabled them to see their work from different points of view and to think in different ways:

Feedback that offers possible routes of enquiry.

Undergraduate student

If the feedback triggers a train of thought relating to my work then I am more likely to use it going forward.

Postgraduate student

Getting other opinions and being able to consider the project in a different way.

Undergraduate student

Agreement

Interestingly, the proportion of postgraduate respondents who described critically evaluating their commentary before using it, and acting on it only where they agreed with it, was almost twice that in the undergraduate programme (BA 12 percent, MArch

23 percent). As these responses illustrate, they recounted being more likely to act on commentary if they agreed with it, and where they considered it valid and useful:

Take into consideration and / or are ignored due to it being against the principle of my design.

Postgraduate student

If the feedback is agreed with and I believe it will improve my work / project.

Postgraduate student

Format and process

A substantially larger proportion of postgraduate respondents remarked that timeliness and sufficient opportunity to act on commentary affected how likely they were to use it, with surprisingly few undergraduates commenting on this (BA 7 percent, MArch 19 percent):

If the feedback was given back in sufficient time. Nearly every time, feedback is given back too late to use.

Postgraduate student

If I think the feedback is useful and if I have the time to do it. There's no point having a final review 3 days before a submission as I won't have time to make the changes.

Postgraduate student

More salient to increasing the likelihood undergraduates would act on commentary was being able to understand it, including what the suggestions were and how to apply them, with over a quarter of First Year respondents commenting on this (BA 20 percent, MArch 13 percent). They highlighted being clear, concise and understanding terminology as influential factors. Undergraduate respondents, but no postgraduates, also described being able to discuss commentary with a tutor and commentary being written down as making them more likely to act on it:

When the feedback is written in more simple / understandable terms as opposed to being overly wordy or technical when not needed.

Undergraduate student

Essay feedback is good when going through an essay with the tutor in a 1:1 to understand what to improve.

Undergraduate student

When it is written down so I can keep looking back at it when needed.

Undergraduate student

Discussion and implications

The findings reveal similarities, but also notable differences, between how undergraduate and postgraduate students perceive and utilise feedback commentary.

This discussion returns to the paper's four research questions.

What do students see as the purpose of feedback?

Whilst Carless (2006) and Adcroft (2011) both found that teachers see feedback as a means for improving performance much more than students do, a significant majority of undergraduate and postgraduate respondents held the conception of feedback's role being improving their coursework and learning, echoing research by Price et al. (2010).

Undergraduates saw commentary's purpose in directing their improvement more than postgraduates, who were more likely to recognise their own role in the feedback process to actualise improvement (Price, Handley and Millar 2011).

A surprisingly small percentage of respondents across both programmes saw an evaluative purpose in commentary diagnosing mistakes. This is notable in the context of research by Nash et al. (2018), which found an evaluative recall bias where students remembered evaluative feedback substantially better than directive. Respondents' emphasis on the directive function of improvement may be due to the predominance of formative commentary in the programmes' design modules, through numerous tutorials

and reviews. In sharp contrast, a meta-study by Jessop and Tomas (2017) found that students generally encounter many times more summative evaluation than formative.

What do students do with feedback they are given?

In describing strategies for using commentary, the percentage of undergraduate respondents that recounted methods of making sense of their commentary, such as summarising it in their own words or highlighting key points, was three times that of postgraduates. This is echoed by a larger percentage of undergraduates citing that being able to understand their commentary and how to apply it increased the likelihood they would act on it, especially in First Year. Winstone, Nash, Rowntree et al. (2017) describe these barriers as awareness of what feedback means and cognisance of strategies by which it can be implemented.

A slightly larger percentage of postgraduates described ways of applying their commentary. However, respondents in both programmes identified where commentary could be utilised as a guide alongside their project or essay, providing direction or setting structure. Whilst postgraduate respondents were more likely to see their own role within commentary's purpose, both undergraduate and postgraduates described methods of analysing their commentary before working from it. In summarising, analysing and applying commentary, students in both programmes displayed strong alignment with Winstone, Nash, Parker et al.'s (2017) proactive recipience processes of goal-setting and self-regulation, and engagement and motivation.

In creative disciplines, discernment and critical judgement are key features of independent learning (Orr and Shreeve 2018). Whilst respondents in all years cited exercising such discernment, appraising commentary before acting on it and using it only where they agreed with the suggestions, and thus demonstrating Carless and

Boud's (2018) capability of making judgments before taking action, the percentage of postgraduate students who described doing so was almost twice that of undergraduates.

Sadler (1998) maintains that students need to be trained how to use feedback, as opposed to assuming feedback literacy skills are intuitive (Winstone, Nash, Parker et al. 2017). The strategies respondents described suggest a foundation on which to build wider adoption of these methods and develop students' feedback literacy. These include, for example, the methods through which undergraduates make sense of their commentary, and the means through which both undergraduate and postgraduate students reflect on and apply it. Learning activities around decoding, critiquing, prioritising and applying commentary could be embedded synchronously with key formative and summative feedback events (Carless and Boud 2018), especially in undergraduate years where understanding commentary's content and how to apply it were significant.

Do students revisit their feedback?

A significant majority of respondents across both programmes described referring back to commentary within a module. However, the perception of feedback's role in learning over the longer term was much more prevalent at undergraduate level. For example, undergraduate students described revisiting commentary to understand their strengths and weaknesses and measure their progress over time. Postgraduates were less likely to associate commentary with their longer term learning and much more likely to question its relevance beyond the module it was delivered within. It is therefore unsurprising that a smaller proportion of postgraduate students described using summative commentary from a previous module to help with a subsequent one. This suggests undergraduate students are more likely to consider commentary will benefit subsequent coursework, and that students' belief of whether commentary has value beyond the module it is

delivered within diminishes between undergraduate and postgraduate levels. That undergraduates were more likely to consider commentary could apply to subsequent modules may explain why a larger percentage of undergraduates described collating their commentary.

Almost a quarter of the respondents who described utilising summative commentary from previous modules referred to this in the context of essays, and this was relatively consistent across both programmes. This may be because unlike design projects, which are supported through weekly tutorials, students receive much less formative commentary on written submissions and are therefore more reliant on summative commentary to improve their subsequent written coursework.

What makes students more likely to act on feedback?

By far the most significant aspect of commentary being acted upon was its relevance. Notably, the percentage of postgraduates commenting on this was almost twice that of undergraduates. Dimensions that defined commentary's relevance included: whether it built on existing work, was specific, practical, constructive and personal. A study of feedback in architecture by Carless et al. (2020) observed students' preference for comments on specific features of their projects over more general discussion that contextualised their work within wider disciplinary issues.

Relevance also affected whether commentary was utilised over the longer term, which was often cited as being where it referred to their working methods. The findings imply that commentary which focuses on students' design processes and skill sets, as well as being specific and personal, is more likely to enhance longitudinal uptake. Orsmond and Merry (2011) found that feedback focusing on subject content may lead students to fail to see broader intended functions for skill development. Similarly, Winstone, Nash, Rowntree et al. (2017) suggest that focusing feedback on a student's

individual improvement rather than relative to module specific criteria, which they can find difficult to relate from one assignment to the next, could better encourage students to act on it.

A surprisingly small percentage of undergraduates cited timeliness affecting the likelihood they would use commentary. This was a much more significant factor for postgraduates, with almost three times the percentage citing this as a factor. This may correlate with the larger proportion of undergraduates than postgraduates who reported referring back to commentary in previous modules, and perceiving the potential utility of commentary over the longer term, and therefore timeliness was considered a less critical factor.

Respondents across both programmes described being more likely to act on feedback that was directional as opposed to diagnostic, with undergraduates more likely to see the purpose of feedback being instructive direction – prescribing what they should do – echoing findings by Winstone, Nash, Rowntree, et al. (2016). An interesting quality that undergraduates and postgraduates both described increasing the likelihood of them acting on commentary was it being generative. This might be considered a form of what Carless et al. (2011) describe as exploratory feedback, which places onus on the student to interpret it, but does so in a way that offers potential routes and alternative perspectives on their coursework. Commentary that is generative, as opposed to providing diagnostic evaluation, is more likely to stimulate their design processes and benefit creative thinking, and therefore could be another strategy through which to enhance uptake.

A limitation of this study is that descriptions of feedback use are self-reported. Winstone, Nash, Parker et al. (2017) suggest it would be valuable to focus on students' actual behaviour when receiving feedback as opposed to self-reported use. This lay

beyond the scope of this study, and an insightful aspect of further research would be to ascertain whether self-reported behaviour aligns with that in practice. Also, as the work of a sole analyst, there was no means through which to cross-reference coding of the data with other evaluators, which may affect the robustness of the process. Efforts were made to mitigate this through repeated re-reading of the data until there was confidence the codes identified all aspects, and reviewing the validity of the themes against both the coded data set and the original full data set.

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