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Ready player one: using Vevox to elicit student participation in lectures

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Abstract

With the pivot back to on-campus teaching, many students find themselves in an unfamiliar learning environment: the lecture theatre. This can result in low rates of participation in lectures, especially with a diverse student demographic, including English as an Additional Language students. This can result in exclusion from learning for these students, as well as many students feeling nervous about participating in a lecture format. This case study looked at using the education technology Vevox to elicit student participation in a lecture format. Vevox was used to embed multiple tasks into a series of lectures with a cohort of third-year Engineering students. Vevox was found to be effective at eliciting high levels of participation, although some tasks had higher participation rates than others. An evaluation survey was also conducted with students where they responded positively to the implementation of Vevox in the lectures. Finally, the case study discusses potential applications and limitations of Vevox, with a recommendation that similar research could be carried out across multiple courses and cohorts to improve efficacy.

Keywords: inclusive practice; educational technology; lecturing; student participation.

Introduction

Encouraging student engagement in higher education (HE) is a task which has provoked scholarly research for decades (Bloom, 1953; Bligh, 1972). The classic lecture approach of the ‘sage on the stage’ (King, 1993, p.30), whereby the lecturer stands at the front of the theatre and transmits knowledge to the students seated in front of them, is a scene that will be familiar to most who have been through HE in the UK. However, as King (1993)

notes, this approach reduces the students to passive learners, with no active role in the learning taking place. In fact, Bloom (1953) discovered that in lectures only 1% of students' thoughts were actively engaged in attempting to solve problems, organise, or synthesise information, whilst 78% of the lecture was spent in passive thought. Consequently, many researchers have examined how to engage students more actively in lectures. In his paper 'Lecturing: a lost art', Penson recommends that lectures need to be a 'learning event', with activities, short group discussions, and other enhancements to increase engagement from the students (2012, p.73).

However, whilst these enhancements can be built into lectures, it can be a challenge to encourage students to participate in them. Participation is a key form of student engagement, but it can be difficult to elicit in lectures. Eliciting participation in lectures can often exclude students who do not have the confidence to participate, so this research aims to utilise the educational technology tool Vevox to elicit student participation in a lecture context and facilitate inclusive practice.

Context

The research took place March to April 2022, and the chosen cohort were third-year Engineering students, undertaking their final year projects. The projects consisted of primary research and a 6,500-word report following the structure of introduction, literature review, methods, results, discussion, and conclusion. The research took place within four one-hour lectures delivered to the entire cohort in a lecture theatre. The cohort numbered 185 students but due to poor attendance across the university for face-to-face provision significantly fewer students attended the lectures. This could reflect a wider issue in HE, where cohorts who spent the majority of their learning experiences online could be reticent to return to the classroom (Hood and Powell, 2022). It was decided to use the educational technology Vevox in the lectures, as it allowed students to participate in activities anonymously using an internet connected device. This anonymity could reduce 'participative performativity' whereby students feel obligated to actively engage in lectures due to 'student engagement policies' which reward participation (MacFarlane, 2022, p.142). Whilst there was no such policy in place in this context, the anonymity of Vevox could still prevent this participative performativity and help promote meaningful

engagement. Vevox was also chosen as the university has a licence for the software and it allows large numbers of participants to engage, which suits a lecture format.

Guiding questions

- How can Vevox be utilised for inclusive practice?
- How can the use of Vevox encourage participation in a lecture style format?
- What is the most successful way to integrate Vevox to encourage participation?
- How will students perceive the use of Vevox in lectures?

Ethical approval

Ethical approval for the research was obtained using Ethos, the university's ethics platform. A participant information sheet was provided to all student in two formats: digitally a week before, and then a paper copy during the first lecture. The sheet explained what the study would involve, what the data collected would be used for, and how it would be stored. A consent form was also provided to each student prior to the first lecture, and these were signed and collected. There was extra time immediately before the first lecture for this to be done, so it did not use any of the 60 minutes of allotted lecture time. The data collected using Vevox is completely anonymous and cannot be attributed to any individual participant.

Literature review

When considering how to elicit participation in lectures, the characteristics of the learner group must be considered. The Engineering cohort this research took place with contained around 52% international students, who did not use English as their first language. This can affect their willingness to participate verbally in lectures, due to a fear of making an error (Doyon, 2000). The cohort was also 80% male, which can lead to female students being unwilling to verbally participate in lectures by answering questions the lecturer may ask (Jones and Dindia, 2004). Other studies have found this to be especially true in scientific disciplines (Eddy, Brownell and Wenderoth, 2014; Ballen et al., 2017). In addition to these student profiles above, even the most confident student can be hesitant to speak

out in a lecture context, due to the social pressure involved with speaking aloud in front of a group of their peers (Liu and Littlewood, 1997). Consequently, activities such as verbal question and answer segments to the entire lecture theatre can be ineffective at eliciting participation and can exclude sections of the student demographic.

It is also important to consider the impact the Covid-19 pandemic has had on students' willingness to participate. When this research took place, students had spent a large proportion of their university experience learning online. This often consisted of online lectures where the students' cameras were off, and participation would mainly take the form of typing in the chat box. With the pivot back to on campus learning, especially in a lecture format, the prospect of verbal participation was potentially daunting for a large percentage of students. These factors necessitated the need for inclusive practice, to attempt to make students feel comfortable enough to participate in the lectures.

Denial (2020) discusses a pedagogy of kindness, which recognises students as active classroom partners; educational technology can be used to encourage this role as active classroom partners. To implement this, research by Gilmour (2021) used the Mentimeter student response system to analyse student perspectives on a wider scale, such as their opinions on the course and staff as whole. Gilmour rationalised this use by claiming 'the pandemic had the potential to create disconnection, so such opportunities to *hear* the student voice were important in building trust and supporting students to consider their agency' (2021, p.2). The necessity of hearing the student voice is also important in individual lectures, as through student participation it is possible to check learning, formatively assess students, and allow them the ask questions and express their perspective. The use of Vevox in this research aimed to involve the students as active classroom partners, and the anonymity of the software allowed this process to be inclusive.

Kuh and Hu (2001) suggest that technology can be a motivating factor to encourage students to participate in learning through cognitive engagement. Similarly, Laird and Kuh (2005) found a strong correlation between using educational technology and involvement in active and collaborative learning. Research by Gill-Simmen (2021) utilised Padlet to promote participation amongst a cohort. Gill-Simmen cited the multi-user interface, ability to interact asynchronously, and the potential for active engagement as key drivers behind the choice of Padlet. This research utilised Vevox as it allows many users to participate,

which is important in a lecture context. However, Vevox differs from Padlet as it provides feedback on students' responses instantly, so is more suited for checking and working with responses within the lecture.

Methodology

Newsander and Borrego (2009) define student engagement as a learning environment where students are actively engaged in a culture of participation and are provided with adequately resourced and interactive approach to teaching. Consequently, the choice of software to elicit participation was key. Unlike similar software such as Mentimeter, Vevox has several functions that allow students to participate: polls, word clouds, open text responses, and quizzes. This variety of functions allows for the student responses to be collected in diverse formats, and for the students to cognitively engage with the session content in diverse formats, which can increase motivation (Kuh and Hu, 2001; Laird and Kuh, 2005). The anonymity of Vevox was also a key factor in the decision to utilise it as an engagement tool. The anonymity could help to reduce students feeling obligated to engage in the aforementioned 'participative performativity' (MacFarlane, 2022, p.142). MacFarlane argues that 'performative environments encourage inauthentic behaviour as individuals endeavour to conform' (2015, p.347). Vevox not only allowed a diverse range of activities to be embedded into the lectures, but also allowed for students to remain anonymous and thus engage meaningfully with the activities, as opposed to feeling obligated.

To operate Vevox, students visit Vevox.app on an internet connected device and then type in the session code when prompted. They are then logged in to the session, and any points of participation will appear on their device. Vevox can be embedded into PowerPoint presentations (PPTs), so the questions appear on the slides, and the response options then appear on the student's device. When the lecturer is ready, they close the activity, and the response data can be displayed on the PPT and on students' devices.

There were four sessions delivered, designed to help students write these elements of their project: aims and objectives, literature reviews, methodologies, and results and discussions. The format of the points of participation varied, with some poll questions,

some multiple choice and some word clouds used throughout the sessions. At the end of the final session the students were asked to complete a short evaluation survey using Vevox, which aimed to ascertain their opinions on the use of the software.

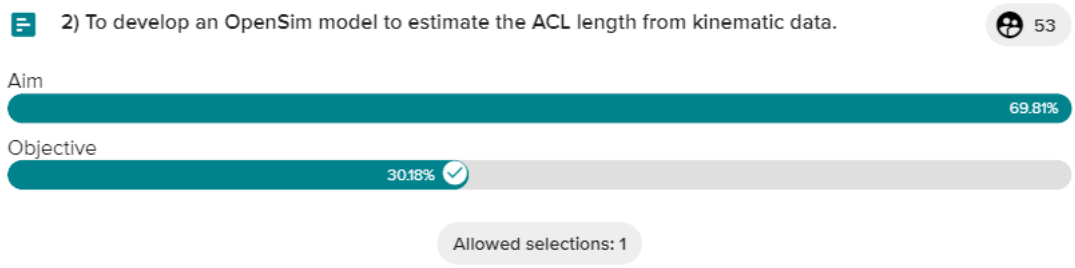
Results

Participation in the polls can be seen from the results available on Vevox: 125 individual students connected to the Vevox, whilst 87 participated in the polls. This represents a 70% participation rate across all four sessions combined.

Session 1

Figure 1 illustrates the results from a multiple-choice question in session 1 on aims and objectives, whereby students had to select whether the displayed sentence was an aim or an objective. As can be seen from Figure 1, from the 72 who attended, 53 students participated. This represents a participation rate of 74%. Figure 1 is shown as an example of the types of activity and participation rate from this session.

Figure 1. Aims and objectives poll results.

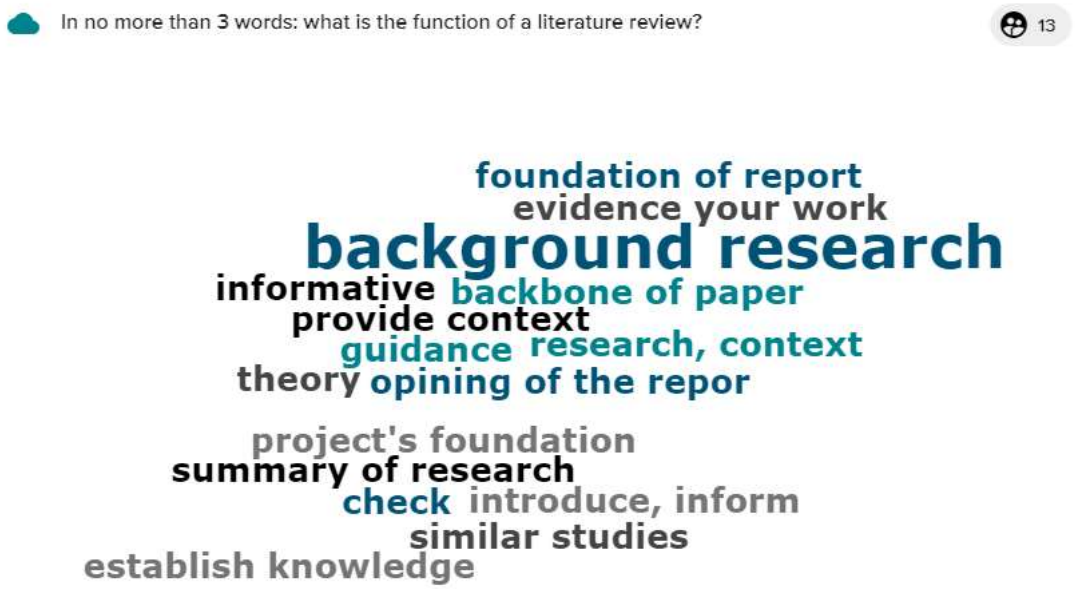


Session 2

Figure 2 shows the results from a word cloud participation in session 2 on literature reviews. After some slides illustrating the forms and functions of a literature review the students were asked to type in no more than three words what the function of a literature review is. Words that were used more commonly by the students appear larger on the word cloud. After the results were shown, the lecturer commented on some points they considered important to raise. As can be seen from Figure 2, from the 50 who attended, 13

students participated. This represents a participation rate of 26%. Figure 2 is shown as an example of the types of activity and participation rate from this session.

Figure 2. Literature reviews word cloud results.



Session 3

Figures 3 and 4 show an activity from session 3 on methodologies, whereby the students were tasked with reading the sentences on the slide extracted from a methodology. The sentences were numbered, and the task was to re-order the sentences correctly and post that order on the word cloud. As shown by Figure 4, from the 16 who attended, 8 students completed the activity. This represented a participation rate of 50%. The number of students who attended session 3 was low, due to the session coinciding with industrial action at the university.

Figure 3. Methodologies sentence ordering task.

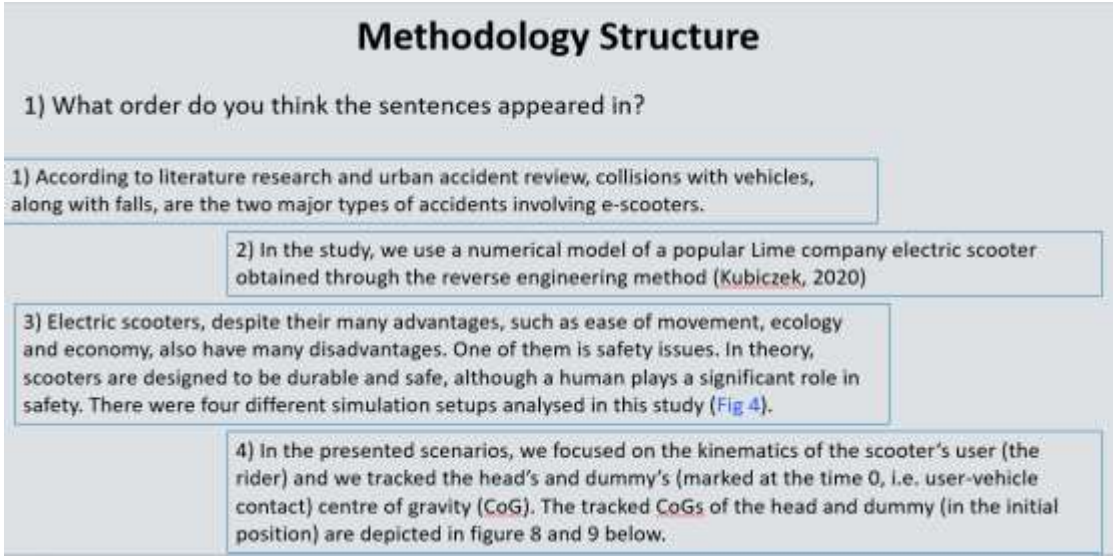
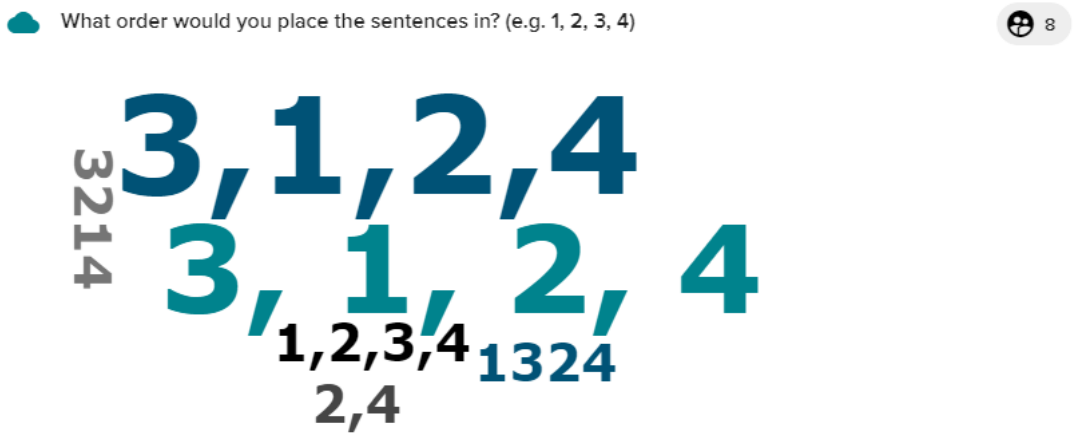


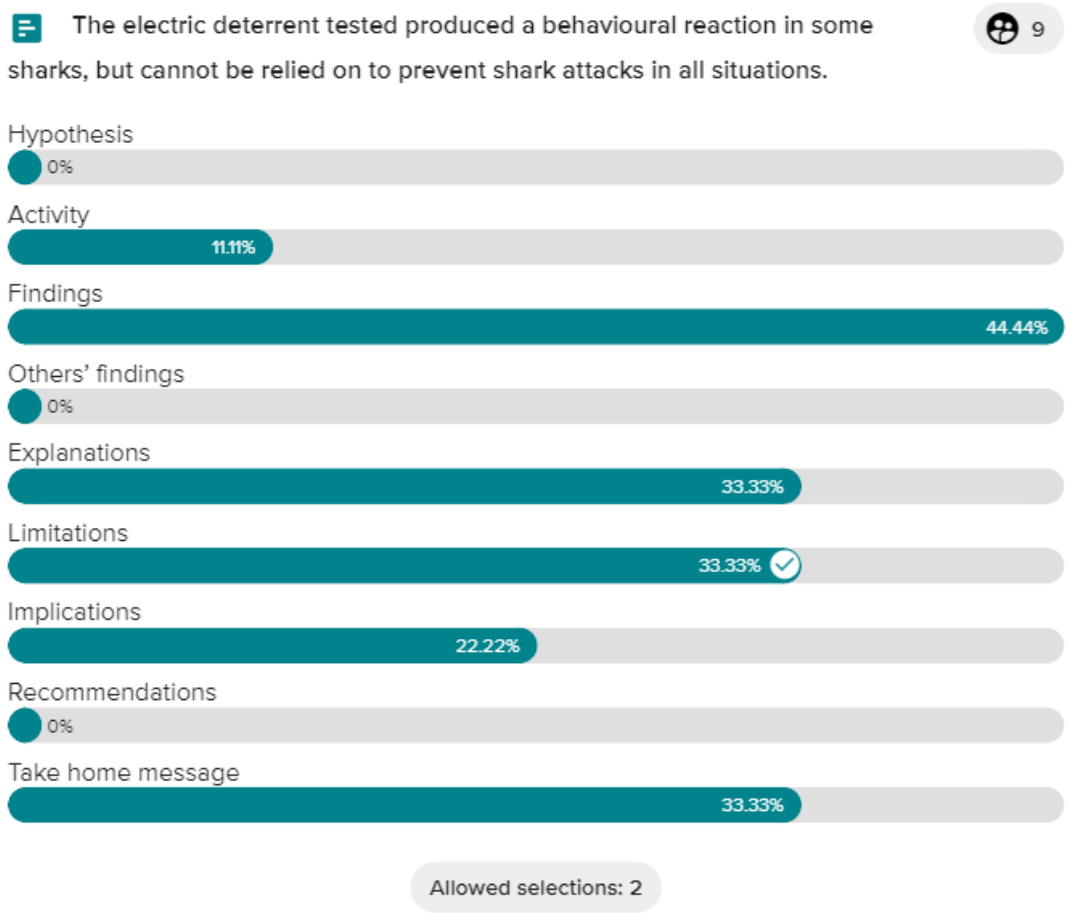
Figure 4. Methodologies sentence ordering task: word cloud results.



Session 4

Figure 5 illustrates the results from a multiple-choice question embedded in session 4: discussions. The students were tasked with reading the sentence at the top of a figure, which comes from a discussion section. As indicated by the figure, they then had to select two elements of a discussion they thought the sentence represented. As can be seen from Figure 5, 9 students participated in the activity, out of a class total of 11. This represents a participation rate of 82%. The number of students for the final session was low, due to it unfortunately coinciding with extreme weather which made travel difficult that day. Figure 5 is shown as an example of the types of activity and participation rate from this session.

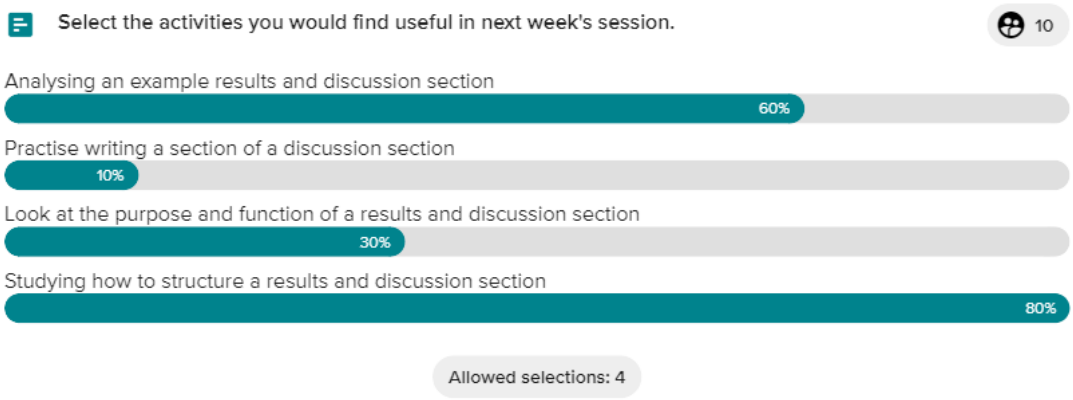
Figure 5. Discussions multiple choice poll results.



All sessions

Another element of participation built into the sessions was giving the students the opportunity to vote on what activities they wanted to be incorporated in the following week's lecture. The lecturer selected a range of activities related to the following week's topics, and the students selected any they felt would benefit them. Figure 6 below is from session 3 on methodologies, and shows 10 students participating from 16 attending, for a response rate of 63%.

Figure 6. Activities self-selection.



Discussion evaluation survey results

As evidenced by the research results, the use of Vevox elicited a high level of participation from the students present in the lecture, with a participation rate of 70% of the students who attended the lectures. However, there was a significant drop in attendance at the sessions: 72 attended session 1, 50 attended session 2, 16 attended session 3, and 11 attended session 4. Whilst this could have been partly due to external factors, such as industrial action and adverse weather conditions, Parsons and Johnston (2022) note students' personal circumstances can have an impact on their face-to-face attendance. The reasons for using Vevox to evaluate the use of the software were similar to the reasons for its use in the lectures; namely, that it allowed anonymity. However, as only 16 evaluation responses were elicited, this must be noted as a weakness in this study. This did not change the objective of the case-study, to utilise Vevox to elicit student participation in lectures, as engagement is vital for students who attend lectures. Arguably in this research, using Vevox facilitated inclusive practice, as students who may not feel comfortable speaking out verbally in a lecture context were able to participate anonymously, which research has shown can improve participation rates (Freeman, Blayney and Ginns, 2006).

However, there was some discrepancy in participation rates amongst the different formats of task. The multiple-choice selection questions elicited higher participation rates than the word cloud activities. This could indicate that a lower workload for each participation task will elicit higher participation rates. Consequently, the results indicate that several shorter

tasks in a lecture format may lead to a more successful integration of Vevox in a lecture format.

Higher participation rates without a purpose are ultimately redundant, but a controlled study by Mayer et al. (2009) found that students' exam results improved when a class engaged in active participation in lectures, using a similar method as Vevox. Mayer et al. (2009) theorise that this is connected to the generative theory of learning, whereby students who are more cognitively engaged in lectures will retain information more effectively. This supports the use of Vevox as a tool to elicit participation and thereby enhance students' learning in a lecture context.

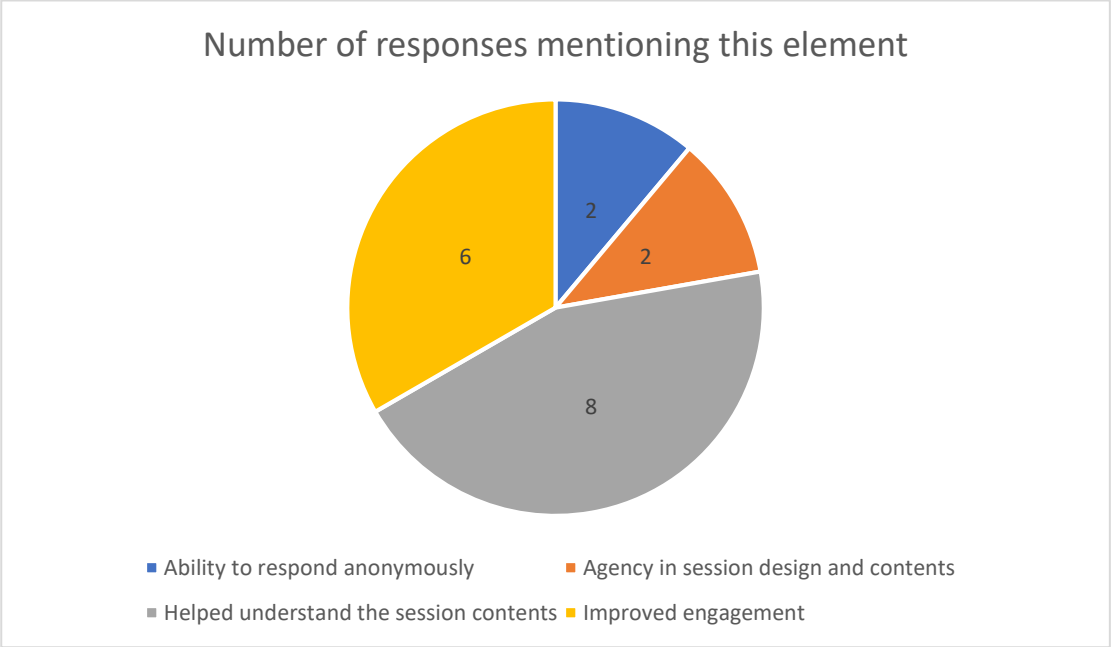
Evaluation survey discussion

The students' responses to the evaluation survey indicate a positive response to the use of Vevox. The 16 responses were divided into 4 categories of meaning based on what the students stated they felt the use of Vevox achieved. The categories are:

- Ability to respond anonymously.
- Agency in session design and contents.
- Helped understand the session contents.
- Improved engagement.

Some responses were included in two categories, due to their being multiple elements to the response. For example, 'It allowed me to practise what was being taught in the session. Also, it was nice to use if you are too shy to answer' was included in both 'ability to respond anonymously' and 'helped understand the session contents' as it indicated both. The results of the evaluation are displayed in Figure 10.

Figure 10. Evaluation survey response topics.



As can be seen from Figure 10, the students found the use of Vevox most effective in helping them understand the session contents, with eight students responding thus. This correlates with research by Mayer et al. (2009) and Shimaya et al. (2020), which points to eliciting active participation in lectures using technology to be an effective way to enhance student learning. These results also indicate that students positively perceive the use of Vevox in lectures, as indicated by the six students who responded that using Vevox improved their engagement.

Two students felt the ability to respond anonymously improved the sessions. This connects with research by Freeman, Blayney and Ginns (2006), who state that academics should consider the use of electronic response systems to design engaging learning environments. The results also support claims (Denial, 2020; Gilmour, 2021) that anonymity of response can form a key part in a pedagogy of kindness, and therefore inclusive practice. Bearing these arguments in mind, lectures are arguably an ideal scenario to implement this technology.

In hindsight, it may have been valuable to include a student self-evaluation on their levels of motivation to engage in the lectures, similar to work by Minogue, Murphy and Salmons (2018), who used semi-structured interviews asking students to self-evaluate their motivation to engage in lessons. This could have been built into the Vevox evaluation, perhaps by asking a question such as ‘did the use of Vevox impact your motivation to

participate in the lectures?'. This question would have arguably led to responses more targeted to the research question of how to elicit engagement from students in lectures.

Conclusions

Scope and limitations

The scope for implementing Vevox into lectures in HE is vast. Since returning to campus, many students will have attended a lecture, and may have experienced hesitancy in participating. Vevox can be utilised to support educators to elicit this participation.

There are limitations to this study. Due to external circumstances such as industrial action and extreme weather, attendance for the second two sessions was significantly lower than for the first two. This lowers the efficacy of the study, as it is hard to know if Vevox would have continued to elicit participation from a large group across four lectures. Additionally, some activities implemented using Vevox did not elicit high rates of participation. The word clouds elicited lower rates of participation than the multiple-choice polls, for example. This could indicate there is a 'threshold' to students' willingness to engage with Vevox tasks. If the task is too demanding, the anonymity inherent with Vevox may tempt students to simply not partake. This could be a drawback to the use of Vevox, or other anonymous audience participation software.

Recommendations for further research

To improve the efficacy of this study, a similar research approach could be taken with multiple other cohorts. If these were in other disciplines and with other year groups, this would help ascertain whether Vevox was effectively eliciting participation. A longer series of lectures with more consistent attendance would be a good measure of the prolonged effectiveness of Vevox at eliciting participation in lectures. It would also be beneficial to utilise other forms of educational technology and compare them against Vevox. For example, using a technology that allows anonymous participation, such as Padlet, would allow for comparison and help to ascertain whether anonymous software would encourage students to engage in participative performativity (MacFarlane, 2022). This comparison would allow analysis of whether anonymity encourages more meaningful engagement, as

students are not just participating to be seen as endeavouring to conform to the lecturer's expectations (MacFarlane, 2015)

In this study, using Vevox to elicit participation from students in lectures resulted in several benefits: good rates of participation, an ability to adapt to the students' responses, and a positive response from the students. With the pivot back to on campus learning after the challenging period many students faced during Covid-19, the need for inclusive practice is greater than ever, especially in a potentially intimidating environment such as a lecture theatre. Educational technology such as Vevox can support educators to design and deliver this inclusive practice.

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