



# Academics' intention to sustain new teaching practices after the COVID-19 pandemic: Examined through the theory of planned behaviour

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## Abstract

Following the COVID-19 pandemic, higher education teachers, having transitioned to new teaching methodologies, including online learning and modified assessment strategies, face the question: Do they intend to revert to pre-pandemic ways of operating or retain their new practices? A university-wide invitation with an incentive resulted in 63 academics from all four faculties of the university participating in this study. Using the Theory of Planned Behaviour, this exploratory research assessed the roles of attitudes, subjective norms, and perceived control in determining academics' intentions to maintain instructional shifts. Collectively, these elements robustly predicted intention, explaining 38% of the variance. Notably, our findings revealed that fostering a positive attitude towards these changes was the sole unique driver for wanting to maintain them. Without a conducive attitude to teaching, the efforts of others and perceived control become inconsequential in effecting educational change. Within the limitations of a small sample size, our study offers an understanding of the variables influencing academics' intentions to sustain shifts in teaching practices. Such knowledge can guide future decision-making in higher education environments, especially when substantial transformation is required.

**Keywords** Intention · Educational change · Curriculum · Theory of planned behaviour · Academic work

The global academic landscape underwent a seismic shift between 2020 and 2021 as higher education institutions were compelled to revise their curricula in response to the COVID-19 pandemic (UNESCO, n.d.). This necessitated an abrupt shift to what is known as 'emergency remote teaching' (Hodges et al., 2020). Unlike conventional online learning, which is carefully designed with the learners' needs in mind (Bozkurt & Sharma, 2020; Hodges et al., 2020), this approach was marked by a lack of planning, reliance on readily available

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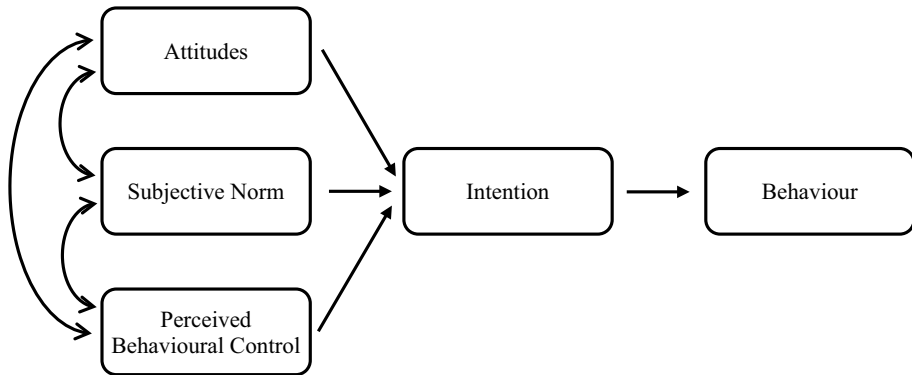
technological resources, and a primary focus on maintaining the continuity of instruction (Hodges et al., 2020; Watermeyer et al., 2020). During this upheaval, in-person classes and assessments were suspended or shifted online (Crawford et al., 2020; Johnson et al., 2020). The forced transition online presented significant challenges (Weidlich & Kalz, 2021), yet it also catalysed innovation, enabling educational institutions to experiment with and enhance their educational delivery methods (Lodge et al., 2022). Some adaptations were envisaged as short-term remedies to the unique hurdles presented by the pandemic, while others could represent the ‘new normal’, potentially reshaping future education delivery.

A study of nine institutions suggests that the pandemic ‘will accelerate the adoption of learning technologies’ (Guppy et al., 2022, p1769). But is this the case? The higher education research landscape, so far, primarily addresses the immediate effects of the pandemic on higher education, leaving a noticeable gap in the empirical evaluation of its enduring changes. Given the significant changes made during the pandemic (Bartolic et al., 2022; Johnson et al., 2020; Watermeyer et al., 2020), our current study seeks to understand academics’ *intentions* to retain these changes. In this regard, we used the Theory of Planned Behaviour (TPB; Ajzen, 1985), a predictive model of behaviour change, to provide a robust framework for interpreting how academics might intend to uphold these changes in the long run.

## Viewing changes to teaching practices through the lens of theory of planned behaviour

The widely recognised framework of the Theory of Planned Behaviour (Ajzen, 1985) offers a useful perspective on a variety of human social behaviour and change. It has been particularly valuable in educational settings, predicting various academic behaviours such as student cheating (Harding et al., 2007), dropout rates (Dewberry & Jackson, 2018), utilisation of educational technology (Moss et al., 2010), staff turnover in post-pandemic higher education (Costan et al., 2022), and technology adoption during the pandemic (Rahimi & Tafazoli, 2022). The TPB’s essential premise is that behaviour is shaped by three main factors: attitudes, subjective norms, and perceived behavioural control (Ajzen, 1985, 2002, 2011, 2020). Ajzen (1985) defined attitude as the person’s positive or negative feelings towards the behaviour. Subjective norms are defined as the person’s perceptions of the social pressure to perform the behaviour, and perceived behavioural control reflects a person’s confidence in their ability to perform a behaviour, considering factors that might help or hinder them. In the current context, attitudes relate to academics’ positive or negative perspectives on the effectiveness and necessity of changes induced by the pandemic. Subjective norms include the influence of peers, students, and institutions on the decision-making process, and perceived behavioural control is an academic’s confidence in their ability to implement and sustain changes, considering elements like resource availability, expertise, and institutional support. Furthermore, TPB posits that a person’s intention, driven by these three factors, ultimately influences their behaviour (Ajzen, 1991; McEachan et al., 2011; see Fig. 1).

The TPB has been validated through comprehensive meta-analyses, showing its ability to account for 39–44% of the variance in intention and 19–27% in actual behaviour (Armitage & Conner, 2010; McEachan et al., 2011) across fields such as education, health, and workplace environments (Armitage & Conner, 2010; McEachan et al., 2011; Cooke et al., 2016; Lin & Roberts, 2020; McDermott et al., 2015). Given TPB’s broad applicability and the successful prediction of human behaviour, we propose to use it as a



**Fig. 1** Theory of Planned Behaviour adapted from Ajzen (1991, p.182)

lens for understanding academics' intentions to maintain pedagogical changes in a post-pandemic context. We seek to explore how attitudes, subjective norms, and perceived behavioural control may influence their intention to sustain these changes.

### Teacher attitudes in educational settings

Using the TPB, studies by Karacan and Polat (2022) and Sadaf et al. (2012, 2016) found that attitude towards using augmented reality technology and implementing Web 2.0 technologies was a strong predictor of pre-service school teachers' intention to use these tools in a future classroom. This was similarly found in primary and secondary school teachers implementing Web 2.0 and digital learning materials in the classroom (Krejins et al., 2014; Teo et al., 2016). Although there is a limited amount of literature looking specifically at university teachers, a study by Rahimi and Tafazoli (2022) found that a modified version of TPB could predict information and communication technologies use during the pandemic. While the authors found that all three factors from the TPB predicted intention, attitude was the strongest predictor. Thus, academics' attitudes towards the curriculum changes during the pandemic may play a significant role in their intention to sustain these changes. If they believe that the changes have had a positive impact, perhaps on student learning outcomes and engagement or workload, they may be more likely to continue with them.

### Subjective norms in educational settings

Subjective norms refer to the social pressures that influence a person's behaviour (e.g. expectations of family, peers and colleagues; Azjen, 1985, 1991). If there is widespread support for sustaining the changes, this may increase academics' motivation to continue with them. Subjective norms have been found to be useful in predicting teachers' intentions to adopt technology in the classroom (Karacan & Polat, 2022). Although subjective norms were a significant predictor of intention, Karacan and Polat (2022) found it to be the least predictive of all three TPB factors theorised to predict intention. However, other studies by Sadaf et al. (2012) and Cheon et al. (2012) found that subjective norms were not a significant predictor of future educational technology use in pre-service teachers, and Teo et al. (2016) found that it negatively predicted primary and secondary school teachers' intentions to use technology. The non-significant findings in pre-service teachers may be explained by their lack of real-world

context, given they were not yet teachers, with real pressure to adopt the technology. These mixed findings are worth exploring further.

## Perceived behavioural control in educational settings

Academics' perceived ability and confidence to sustain curriculum changes may also be an important factor. If they believe they have the necessary resources, experiences, skills, autonomy, and support to continue the changes, they may be more likely to do so. A study by Tan et al. (2020) in the first year of the pandemic used a modified version of the TPB to predict whether teaching staff would continue to teach online after the pandemic. While only early in the pandemic, and before classrooms returned to campuses, they found that perceived behavioural control was the strongest predictor of intention. However, their model combined subjective norms and attitudes into one single factor and introduced two new variables (effort and opportunity), so it is not a straightforward application of the TPB. Additionally, early in the pandemic, staff may have been given more latitude given the urgency and novelty of the pandemic, thus enhancing their perceived and actual control over their teaching approaches. Indeed, in a study before the pandemic exploring university teachers' intention to teach online in Saudi Arabia, Alenezi (2019) found that subjective norms and attitudes predicted intention but that perceived behavioural control did not. Thus, as pandemic conditions lessen, the potential return to default or pre-COVID teaching policies may influence the control that teachers feel they have over their teaching practices.

## Aims and hypotheses

Most research up to this point has focused on the immediate effects of the pandemic on higher education. Further, to our knowledge, no study to date has applied the Theory of Planned Behaviour to predict the intention to maintain COVID-19 pandemic changes in higher education. This study aims to explore the enduring changes and the intentions behind them, providing insight into the long-term impact on higher educational practices. Using the theoretical lens of the TPB, we hypothesise the following:

1. Attitude, subjective norms, and perceived control combined will predict academics' intention to sustain their teaching changes beyond the pandemic.
2. Attitude, subjective norms, and perceived control will each predict academics' intention to sustain their teaching changes beyond the pandemic.

While the current study has not included a measure of actual behaviour change, intention can still be seen as a valuable and meaningful endpoint because of the well-established link between intention and behaviour (Karacan & Polat, 2022; Rahimi & Tafazoli, 2022).

## Methodology

### Participants and context

Participants were drawn from a large, single, Australian multi-disciplinary University. The university had a history of online and distance education, and all teaching staff

had to undertake a Graduate Certificate of Higher Education as part of their pedagogical training when they commenced working at the university. It was a prerequisite that participants had taught the same undergraduate course both prior to (2019) and following the onset of the pandemic (2022/2023). Local pandemic restrictions in 2020 and 2021 necessitated that academic teaching staff adapt to primarily online teaching methods, including exclusively online exams, over the span of two years. However, with the easing of the pandemic situation in 2022 and 2023, the opportunity arose for academics and students to return to on-campus learning, presenting academics with a choice: maintain their pandemic-induced adaptations or revert to their pre-pandemic teaching practices in part or in full.

Participants were recruited through both email outreach and informal word-of-mouth. Given that the study was broadly advertised online throughout the university, we could not track the total number of faculty members who were exposed to the invitation, which precludes us from calculating a response rate for this study. The online survey took approximately 30 min to complete. The University ethics board approved the study. Consenting participants were entered into a drawing to win one of two \$250 gift certificates. Ethics was approved by the University's Faculty of Health Human Ethics Advisory Group with approval number HEAG-H 170\_2022.

Participants included 63 academics; the majority were 40 or above years old (71.4%); identified as female (48%) or male (47%); were employed at Level B (Lecturer) or Level C (Senior Lecturer) (81%); had an average teaching workload of 52.7% (range = 15–100%;  $SD = 19.2\%$ ); had been teaching for 5–14 years (66.7%); and were from the Faculty of Health (33.3%), Faculty of Science, Engineering, and Built Environment (30.2%), Faculty of Arts and Education (19%), or Faculty of Business and Law (17.5%).

## Materials

### Demographics

Via the online survey, participants were asked a range of demographic questions first, such as age, gender identity, academic level, teaching workload allocation, and the Faculty in which they were employed.

### Questions related to the theory of planned behaviour

Participants also completed online survey questions regarding attitude, subjective norms, perceived control, and intention to sustain changes. In the absence of measures specifically suited to this present topic of post-pandemic changes, we based our approach to survey creation on works by Ajzen (e.g. 1985, 1991, 2002), as well as blending a search of available literature and modifying items to suit the current context. Each question was scored on a five-point Likert scale, with defined endpoints of 'strongly disagree' and 'strongly agree'. Some items were negatively worded to reduce response bias and were reverse-coded for analyses. See [Appendix](#) for all items.

**Attitude** The attitude scale comprised two questions to measure academic staff's attitudes towards the curriculum changes. Example: 'I see the changes to my teaching practices to be overall positive'.

**Subjective norms** The subjective norm scale comprised three questions to measure academic staff's perception of the opinions and beliefs of colleagues and other key stakeholders regarding curriculum changes. Example: 'I believe others think the changes I have made are positive.'

**Perceived behavioural control** The perceived behavioural control scale comprised five questions to measure whether academic staff felt like they had the necessary resources, skills, and support to continue the changes. Example: 'I do not believe I have any control over what changes are made' (*reversed scored*).

**Intention** The intention scale comprised four questions to measure the academic staff member's intention to maintain curriculum changes. Example: 'I intend to continue with most of my current changes to my teaching practices'.

## Data analyses

Overall, the amount of missing data was less than 1%, and no variable in our models had more than 1 data point missing. Missingness in CFA modelling was handled using maximum likelihood estimation (Enders, 2022).

Confirmatory Factor Analyses in Mplus version 8.9 (Muthén & Muthén, 2017) was used to validate the structure of the TPB model as an important measure validation step prior to analyses that directly address the study aims/hypotheses. In this CFA, items were set initially to only load onto their primary factor whilst all factors were allowed to covary. Adequacy of model fit was assessed in the current study using conventional cut-offs:  $p > 0.05$  for chi-square,  $\text{chi-square}/df \leq 5$ ,  $\text{CFI} \geq 0.90$ , and  $\text{RMSEA} \leq 0.08$  (Hair et al., 2010). Modification indices were inspected for sources of model misfit, and theoretically plausible covariances were added to the model as needed to meet acceptable standards of fit. We based this on all fit statistics except for chi-square, which is known to be an overly sensitive measure of fit (DiStefano & Hess, 2005). McDonald's omega estimates were obtained from this finalised CFA solution to evaluate the internal consistency of subscales.

To test the study hypotheses, we conducted a multiple regression with intention regressed onto the factors of attitude, subjective norm, and perceived control. We also included the co-variate 'teaching experience' as we thought the length of time teaching may be relevant. We present the results below with and without the co-variate included. In standard null hypothesis significance testing, null results (i.e.  $p > 0.05$ ) are difficult to reconcile, as it is unclear whether they reflect low statistical power or strong evidence in favour of the null hypothesis (Wagenmakers et al., 2016). Accordingly, we supplement our multiple regression results with Bayes Factor statistics, generated in R with the BayesFactor package. Bayes Factor provides a numeric value to quantify how much more likely the null (or alternative) hypothesis is based on one's data and thus can potentially disambiguate null findings. We used a top-down approach in the current study, where the full regression model was compared to separate models in which each of the three predictors was removed (e.g. model 1 includes subjective norms and attitude but excludes perceived behavioural control). Using Jeffreys' (1961) classification system, in our top-down approach, Bayes Factor values of 1 give equivocal support for null and alternative hypotheses about the predictive value of a predictor on the outcome; values above 1 give

increasing evidence in favour of the alternative hypothesis (i.e. that the three predictors do predict intention). Values of 1–3 are classified as anecdotal evidence, 3–10 are classified as moderate evidence, and > 10 are classified strong evidence for the alternative hypothesis. Values less than 1 give increasing evidence in favour of the null hypothesis (i.e. that the three predictors do not predict intention) with values 1/3 to 1 providing anecdotal evidence, 1/3 to 1/10 providing moderate evidence, and < 1/10 providing strong evidence for the null hypothesis (Jeffreys, 1961).

## Results

The results are presented in three sections. The first section provides descriptive statistics on intention, attitudes, subjective norms, and perceived control. The second section details the confirmatory factor analysis (CFA) performed to validate the measure's structure, ensuring that the items are appropriately grouped together to represent the underlying constructs. This validation is essential for confirming that the new measure accurately reflects the theoretical concepts. The third section addresses the hypotheses, examining whether attitudes, subjective norms, and perceived control collectively and/or individually predict the intention to sustain teaching practices.

### Descriptive statistics

Table 1 provides descriptive statistics on intention, attitudes, subjective norms, and perceived control. Attitude and subjective norm had internal consistency estimates of 0.91, indicating the items were consistent within each subscale, while consistency was a bit lower for perceived behavioural control ( $\omega = 0.69$ ), and intention ( $\omega = 0.66$ ). Mean scores show that the scales had on average above neutral (3.0) endorsement, indicating a greater positive attitude, higher control, higher alignment with peers, and greater intent to continue with changes. All the correlations with intention were significant, indicating that attitude, subjective norm, and perceived control were positively related to intention to maintain changes post-COVID.

**Table 1** Mean, standard deviation (SD), internal consistency estimates, and correlations for subscales

	Attitude	Subjective norm	Perceived control	Intention
Attitude		0.50**	0.55**	0.58**
Subjective norm			0.46**	0.44**
Perceived control				0.41*
Min	2.00	2.33	1.60	2.25
Max	5.00	4.67	5.00	5.00
Mean	4.06	3.60	3.74	3.81
SD	0.78	0.47	0.78	0.71
Omega	0.91	0.91	0.69	0.66

\*\* $p < 0.000$ , \* $p < 0.01$

## Confirmatory factor analyses

We used CFA to validate the measure's structure, ensuring that the items are appropriately grouped together to represent the underlying constructs. Confirmatory factor analysis for the factor structure provided inadequate fit initially:  $\chi^2(71)=136.80$ ,  $p<0.001$ ,  $\chi^2/df=1.93$ , CFI=0.784, and RMSEA=0.121. Inspection of modification indices identified covariances that could be added to improve fit. In total, four additional covariances among items were included to achieve acceptable model fit: (1) intention item 4 ('I am reluctant to make any further changes') with intention item 3 ('I intend to make further changes to my teaching practice in response to the post-covid normal'), (2) subjective norm item 3 ('My colleagues want to return to their original teaching practices used in 2019') with attitude item 2 ('I see the changes to my teaching practices to be overall positive'), (3) perceived control item 2 ('I am confident I can maintain the changes I have made') with perceived control item 1 ('I do not believe I have any control over what changes are made'), and (4) perceived control item 5 ('I feel like the changes I made have been imposed on me') with perceived control item 1 ('I do not believe I have any control over what changes are made'). This revised structure, with the factors aligned with covariates, had acceptable fit:  $\chi^2(67)=81.93$ ,  $p<0.001$ ,  $\chi^2/df=1.22$ , CFI=0.951, and RMSEA=0.059. While we achieved an acceptable fit through modifications, future research may consider other ways of revising the measure. For instance, there is some potential semantic overlap between items, and it is worth considering whether revising the wording for these items might reduce these excess correlations.

## Predicting the intention to sustain teaching practices

We tested the hypothesis that attitude, subjective norms, and perceived control combined and or individually will predict academics' intention to sustain their teaching changes beyond the pandemic. The combination of variables predicted 38% of the variance in intention, which is considered large (Cohen, 1988). Table 2 shows that attitude was a significant predictor of intention to maintain changes (with 11.7% of the unique variance). In contrast, subjective norm (2.5% of the unique variance) and perceived control (0.5% of the unique variance) were not significant predictors (although subjective norm trended towards significance). The shared variance of the three IVs was 23%. The covariate teaching experience was not a significant predictor.

Bayesian analyses provide further context for the contributions of individual predictors in the model. Bayes Factor (BF) values suggest strong evidence in support of the alternative hypothesis for attitudes (BF=33.3), anecdotal evidence (e.g. suggests a hint of a phenomenon

**Table 2** Regression analysis of attitude, subjective norm, and perceived control predicting intention to maintain post-covid changes

	Unadjusted		Adjusted	
	B (95% CIs)	<i>p</i>	B (95% CIs)	<i>P</i> (one tailed)
Teaching experience	n/a	n/a	0.09 (−0.27, 09)	0.38
Attitude	0.44 (0.20, 0.68)	0.00	0.67 (0.19, 0.67)	0.00
Subjective norm	0.18 (−0.05, 0.41)	0.06	0.41 (−0.05, 0.41)	0.06
Perceived control	0.09 (−0.14, 0.32)	0.22	0.33 (−0.15, 0.33)	0.22



but lacks definitive proof) in support of a null effect for subjective norms ( $BF=0.66$ ), and moderate support for the null effect of perceived behavioural control ( $BF=0.31$ ) in the full multivariable model.

## Discussion

Higher education institutions worldwide were forced to rapidly change curricula due to the COVID-19 pandemic. With the more recent return to campus and traditional delivery modes, it is not yet clear whether academics intend to maintain these COVID-prompted changes over time or return to familiar pre-COVID-19 practices. To understand academic intentions, we applied the Theory of Planned Behaviour to examine the hypotheses that the combined and unique predictive roles of attitudes, subjective norms, and perceived control in predicting academics' intention to sustain their teaching changes beyond the pandemic. We found that participants, on average, had a positive intention to maintain change, although the responses covered nearly the full range of scores. Overall, we found the model strongly predicted intention through a combination of attitude, subjective norms, and perceived behavioural control. However, only attitude was a significant unique predictor, making attitude likely to be particularly effective in promoting the intention to maintain educational change.

### **Hypothesis 1: Attitude, subjective norms, and perceived control combined will predict academics' intention to sustain their teaching changes beyond the pandemic**

In support of Hypothesis 1, the present study found that the combination of attitudes, subjective norms, and perceived control predicted 38% of the variance in the intention to maintain changes in teaching practices. This finding suggests that these variables together strongly predict the intention to sustain changes to the curricula. While this is the first study to the authors' knowledge that looked at maintaining changes brought about by COVID-19, these findings are consistent with prior educational change research (e.g., 39.1%; Alenezi, 2019; Rahimi & Tafazoli, 2022) and the use of Theory of Planned Behaviour more broadly (e.g., 39–44% of the variance explained predicted intention; Armitage & Conner, 2010; McEachan et al., 2011). Most similarly, in a higher education context, Rahimi and Tafazoli (2022) found that 39.1% of the variance explained to predict intent to incorporate information and communication technologies during the pandemic, and Alenezi (2019) found 39.1% of the variance explained to predict use technology online.

### **Hypothesis 2: Attitude, subjective norms, and perceived control will each predict academics' intention to sustain their teaching changes beyond the pandemic**

#### **Attitude as a unique predictor of intention**

The present study found that attitude was a significant unique predictor, contributing 11.7% of the unique variance of the intention to maintain educational changes, partially supporting Hypothesis 2. This finding suggests that academics who have positive attitudes towards changing their teaching practices are more likely to intend to maintain those changes over

time. It appears in this context that the disruption of COVID was seen to improve teaching practices rather than take away from them, and the changes were viewed positively, worthwhile, and valuable for student learning in the longer term. This finding is consistent with previous research, which highlights the importance of attitudes in the adoption of new educational technologies (Rahimi & Tafazoli, 2022; Sadaf et al., 2012, 2016; Teo et al., 2016) and the importance of a positive attitude in behaviour change more generally (McEachan et al., 2011). Further, as attitude was the only significant unique predictor targeting attitudes towards change, it is likely to be particularly effective, relative to the other variables, in promoting the intention to maintain educational change.

Organisational culture plays a crucial role in shaping employees' attitudes towards change, especially in promoting a culture of innovation through transformational leadership (Farahnak et al., 2020). This leadership style can support change initiatives by providing a clear vision, supportive policies, adequate resources, and a conducive environment for innovation (Farahnak et al., 2020; Owston, 2007; Zhu & Engels, 2014). In the case of the current university, it is likely that the university's teaching support, resources, and vision have an encouraging impact on academics' attitudes towards change. Previous research has shown that organisational leadership is a critical factor influencing staff attitudes towards change and implementation success (Farahnak et al., 2020). Broadbent et al. (2023a) found that university directives and guidance from local leadership were key influences of educational change. Therefore, we can assume that positive staff attitudes towards change at the university are not isolated incidents but rather, to some extent, a result of the university's organisational leadership and culture. However, future research could investigate the mechanisms underlying the relationship between organisational leadership, culture, and staff attitudes towards change to further explore this hypothesis.

### Subjective norms as a unique predictor of intention

The results for subjective norms did not support Hypothesis 2, which proposed a direct relationship with intention to maintain changes in teaching practices. While the regression model did not find a significant unique effect of subjective norm on intention, the moderate positive correlation between the two variables suggests that the expectations of others may influence teachers' intentions to some extent. Similarly, the null finding is not definitive from the Bayes Factor perspective either. This could reflect the low sample size and a need to test in a subsequent and larger study. Previous research on educational change intentions within a Theory of Planned Behaviour framework has yielded mixed findings regarding the role of subjective norms. Cheon et al. (2012) and Sadaf et al. (2012) found that subjective norms were not a unique predictor of intention, Teo et al. (2016) found that it negatively predicted teachers' adoption of new technologies in the classroom, while Karacan and Polat (2022) found a positive prediction. Interestingly, Sadaf et al. (2012) found that the perceived expectations from students were the strongest predictor of subjective norms. In our study, we focused on peer expectations and 'other' key stakeholders, which included students but did not specifically mention them. This may have contributed to the trend towards, but not reaching, significance. Further, as discussed by Altbach (2007), academic freedom within higher education encourages and respects diverse ideas and viewpoints; therefore, peers' viewpoints may be less important and/or influential with academics than with other groups. Nonetheless, subjective norms should not be overlooked in efforts to promote educational change, as they can still play a role in shaping teachers' attitudes and beliefs towards new teaching practices.

## Perceived control as a unique predictor of intention

The results of our study revealed that perceived control did not significantly and uniquely predict the intention to maintain changes in teaching practices, in contrast with Hypothesis 2. This finding was unexpected given that it was found to be the strongest predictor of intention to teach online after the early days of the pandemic (Tan et al., 2020). Perceived control is that academics believe that they have the necessary resources, skills, and support to continue the changes. One possible explanation for the null finding is that perceived control may not directly contribute to intentions because academic staff often have high levels of autonomy in their work and may not perceive external constraints on their behaviour. In other words, they may have a high level of perceived control over their behaviour, but this may not necessarily translate into higher intentions to perform a specific behaviour. Furthermore, academics may be motivated by intrinsic factors, such as a desire for knowledge or a passion for teaching, which may be more influential in driving their intentions than perceived control. Alternatively, perceived control may vary for each type of change, and academic staff may have more control over some changes than others. For example, they may have greater control over learning activities than the examination process, which is heavily regulated in the university. Nonetheless, perceived control should not be overlooked in efforts to promote educational change, as it may still shape individuals' attitudes and beliefs towards new teaching practices.

## Understanding sustaining educator behaviour in higher education

This study establishes reasons why academics in higher education may persist with changes to teaching post-pandemic through the lens of the Theory of Planned Behaviour. Our findings suggest that attitude towards continuing was a predictor of academics' intentions; but when attitude, subjective norm, and perceived control were considered together, they strongly predicted educator intention to keep their new teaching behaviours. What might this mean? As outlined above, we speculate that in higher education, subjective norms and perceived control operate somewhat differently than in other educational and organisational settings; but we also note that they are likely interacting with each other to produce this strong impact on the variance. Thus, we suggest that it may be the combination that matters: A positive attitude towards sustaining teaching behaviour could also enhance the influence of colleagues who are doing the same thing and simultaneously boost a sense of control over teaching. Thus, a positive attitude magnifies the effects of subjective norms and feelings of control, but without this attitude, the other elements will not contribute to the intention to change/maintain behaviour. This does not mean the other elements are not important, but simply that attitude is key. Without a positive attitude, it is unlikely to matter how much others are doing or how much control you perceive yourself as having; it will not influence behaviour to change. This may be a consequence of the solitary nature of higher education with respect to colleagues; often, teaching is a 'lone wolf' activity. Commonly, educators do not know what their peers are doing; they largely design their teaching as they choose. Therefore, attitude is crucial. It may also be that most studies supporting the Theory of Planned Behaviour Change come from fields where there is compelling evidence for the proposed change; thus, in the domain of education, attitude also encompasses a *belief* in the proposal, not just an attitude.

## Limitations

First, the current study did not include a measure of actual behaviour change, which would have been valuable in exploring the relationship between intention and behaviour (although what changes did occur can be found in Broadbent et al., 2023a, 2023b). Even so, intention is a valuable and meaningful endpoint in a study because of the well-established link between intention and behaviour (Karacan & Polat, 2022; Rahimi & Tafazoli, 2022). Follow-up studies could start to assess whether intent on emergence from COVID-19 will, in fact, lead to (sustained) behaviour change. Second, it is important to recognise that the study's results are specific to the context of the university where it was conducted. The sample size of the study was relatively small, and therefore, the findings may not be representative of other universities or academic settings. Further, the institution under consideration has a significant history of online and distance education. This potentially rendered it better equipped to transition to online learning during the pandemic and post-pandemic period, a situation that might not mirror other universities without such a foundation. Third, the selection of academics who volunteered to take part in our study could inherently be those more receptive to alterations and potentially hold a more positive outlook on the transition during a pandemic. Though some resisted change, a significant portion of the participants advocated progressive teaching and learning methods. Consequently, the group that participated in our study might not accurately mirror the wider academic community, especially those individuals who may be more reluctant to embrace change or encounter greater obstacles in adapting to new approaches. Lastly, although we were specifically interested in how teaching practices adopted during COVID-19 would be maintained in the future, the COVID-19 context likely had an impact on the findings. As discussed by Rahimi and Tafazoli (2022), the changes implemented due to COVID-19 may have been perceived as more temporary or reactive rather than as intentional design, which could have affected academics' attitudes, subjective norms, and perceived control over the changes. Additionally, the COVID-19 pandemic may have introduced new and unique challenges for academics not measured here, such as increased workload and stress, which could have interfered with their ability to maintain changes in their teaching practices. Future research could explore how contextual factors, such as perceived intentionality or workload pressures, may moderate the relationships between variables in the theory of planned behaviour. Despite these limitations, our results are broadly in line with the results of TPB in other contexts, and overall, we found the model strongly predicted intention through a combination of attitude, subjective norms, and perceived behavioural control.

## Conclusion and practical implications

The present study investigated academics' intention to maintain changes in teaching practices after the disruption of COVID-19. We found that a combination of variables strongly predicted intention. Our study suggests that fostering positive attitudes towards teaching practices might increase the intention to maintain the change. Possibly, this indicates that the disruption of COVID-19 was seen to improve teaching practices rather than take away from them, and thus the changes were viewed optimistically. However, the study did not find support for the hypothesis that subjective norms and perceived control have a unique predictive effect on the intention to maintain changes in teaching practices. These elements are not to be considered unimportant, but rather, attitude serves as the pivotal

factor. Without a positive attitude, no matter the efforts of others or how much control you believe you possess, it would not lead to a change in behaviour. In addition, we co-varied teaching experience and found that it did not significantly impact intention, suggesting that teachers at any stage of their career are equally likely to maintain change. This finding has important implications, as it suggests that teachers at all career stages can be supported to change teaching practices. Lastly, while the context of this study relates specifically to post-COVID teaching practice, the findings could be relevant to promoting and sustaining educational change most generally. Our study provides valuable insights into the factors that influence academics' intentions to maintain changes in teaching practices, which can be used to inform future decision-making in higher education institutions, particularly when large-scale change needs to occur. Lastly, one of the overarching implications of this study is that if organisations want to make changes with academics, they must make strong and persuasive cases.

## Appendix: Intention to continue with change questions

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Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
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I have significantly changed my teaching practices since 2019.

I intend to continue with most of my current changes to my teaching practices.

My overall approach to teaching in other units/courses has also changed.

I have returned or would like to return to many of my original teaching practices used in 2019.

I intend to make further changes to my teaching practice in response to the post-covid normal.

I am reluctant to make any further changes.

I see the changes to my teaching practices to be overall positive.

I believe the changes to my teaching practices are overall beneficial for students.

I believe others think the changes I have made are positive.

My colleagues have made similar changes.

My colleagues want to return to their original teaching practices used in 2019.

I do not believe I have any control over what changes are made.

I am confident I can maintain the changes I have made.

I am confident I can make new changes.

I feel that I have adequate control to over new changes.

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**Data availability** In compliance with ethical guidelines, the data from this study are not openly available to protect the privacy and confidentiality of study participants. Specific inquiries regarding the data may be directed to the corresponding author, subject to approval, and adherence to applicable data privacy requirements required by the University ethics committee.

## Declarations

**Conflict of interest** The authors declare no competing interests.

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