WHAT DID THE COVID-19 PANDEMIC TELL US ABOUT INITIAL TEACHER PROGRAMMES?

R. Tynan, A. Mallaburn

Liverpool John Moores University (UNITED KINGDOM)

Abstract

The Covid-19 pandemic caused unprecedented global disruption to human activities. This level of disturbance would be unethical during normal research. However, researchers were able to gather data and make comparisons with the pre-pandemic situations. This paper adds new findings to a mixed methods study of pre-service teachers' confidence to teach during the pandemic. Previous findings have been reported in International Academy of Technology, Education and Development (IATED) conference proceedings papers [1][2][3][4].

Pre-service teachers on initial teacher education (ITE) programmes at a higher education (HE) provider in partnership with schools in the northwest of England were invited to participate in anonymous online surveys during 2020 and 2021. Confidence in their ability to demonstrate a range of teaching skills was expressed as numerical self-efficacy scores and open responses. Participants were invited to provide anonymous demographic information including their experience of anti-Covid-19 measures and the associated impact on their ITE programmes [1] [2] [3].

Anti-Covid-19 measures impacted differently on the ITE programmes as the pandemic progressed [1] [2] [3]. Statistical analysis of self-efficacy scores and qualitative analysis of skill statements suggested reasons for the increased self-efficacy scores ascribed by 2020-21 respondents [4]. Further statistical analysis suggests the importance of the final phase of school experience placements for pre-service teachers in developing an awareness of the interrelationships between teaching skills.

The paper is relevant for ITE programmes in the United Kingdom (UK) and internationally where assessment is based upon the successful demonstration of teaching skills or competencies. The discussion highlights the importance of including personal attributes in recruitment criteria alongside qualifications. Bandura's [5] influences on self-efficacy and Korthagen's [6] model for reflection were utilised to help theorise the findings.

Keywords: Pre-service teachers, self-efficacy, Covid-19, England, chi squared, contingency tables, Pearson's r, mixed study, Korthagen, Bandura.

1 INTRODUCTION

The disruption to initial teacher education (ITE) in England caused by anti-Covid-19 measures during the 2019-20 and 2020-21 academic years allowed researchers to gather data as the pandemic progressed and compare it to pre-pandemic studies, and use a quasi-experimental approach to teacher education research that would usually be considered unethical. Data on self-efficacy in teaching skills was gathered at a Higher Education Institute (HEI) offering courses leading to qualified teacher status (QTS) in England. In addition to the original goal of supporting pre-service teachers whose ITE programmes had been disrupted, it became clear that the data could help illustrate the function of key attributes of ITE and QTS programme designs based upon partnerships with schools leading to QTS. The methodology, data gathering and findings at various stages of analysis have been previously reported in International Academy of Technology, Education and Development (IATED) proceedings papers [1] [2] [3] [4]. This current paper describes further quantitative analysis of the data collected.

Pre-service teachers were invited to participate in three anonymous online surveys, at the end of the 2019-20 cohort's ITE programme, near the start of the 2020-21 cohort's ITE programme and again at its end. Respondents were invited to return self-efficacy scores for twenty-four teaching skills, open responses to expand or explain their scores, and demographic data that included their ITE programme experiences during the pandemic. The impact of anti-Covid-19 measures on the 2019-20 respondents can be summed up as curtailed opportunities at a crucial point in their ITE programme [2], but their confidence in their teaching skills remained high [1]. The 2020-21 respondents started their ITE programmes in school, but with lower levels of confidence due to the unpredictable impact of potential anti-Covid-19 measures. Despite a short national lockdown and localised personal, mentor and learner

absences due to Covid-19 [2] the second group's confidence in their teaching ability was generally higher than the first set of respondents by the end of their ITE programme [1]. Both groups of respondents were able to articulate clearly that they understood the positive and negative impacts of their ITE experiences during the pandemic [2]. However, for the 2019-20 respondents, open responses [2] and mean self-efficacy scores [1] were consistent in identifying the teaching skills most negatively impacted were those that they were about to take independent responsibility for when the national lockdown terminated school placements.

A conceptual framework developed [3] [4] that was useful in theorising and explaining findings. This combined Bandura's influences on self-efficacy [5] and Korthagen's onion model for reflection [6]. It included a process model for professional learning and assessment [7] applied to ITE programmes in England based upon standards descriptors [8] and mapped to the programme structure at an HEI QTS provider [9], which was in place when the pandemic started. Shulman's [10] influential model for teacher subject knowledge was also found to be useful.

Comparing findings [1][2] to pre-Covid-19 pre-service teacher self-efficacy studies demonstrated inconsistencies and explanations were sought arising from the impact of anti-Covid-19 measures on the respondents' experience of their ITE programmes [3]. Pre-covid studies suggested that self-efficacy could be expected to decrease during ITE programmes [3], so the greater confidence expressed by the 2020-21 respondents at the end of their ITE programmes was unexpected. This was then considered in relation to individual teaching skills statements [4]. Shulman [10] described teacher subject knowledge in terms of subject matter content knowledge (SMCK), subject specific pedagogical content knowledge (PCK), and curriculum knowledge (CK). These were covered in the surveys by the eight self-efficacy items categorised as pedagogical skills. After taking into account the negative impact of curtailed teaching experience placements on the self-efficacy of the 2019-20 cohort [4], it was clear that higher confidence was demonstrated by 2020-21 respondents at the end of their ITE programmes in all pedagogy skill statements, but only some behaviour management or engagement skills [4]. A consideration of the skill statements suggested a link between higher confidence in the second cohort and skills that were more reliant on knowledge, practice, and mentoring, rather than the personal attributes of the pre-service teachers [4].

Bandura [5] identified four major influences on self-efficacy: mastery, persuasion and vicarious experiences, together with the affective state of the individual. Of these, Bandura considered mastery experiences to be the most important [5]. Pre-pandemic studies used for comparison broadly supported Bandura's original ideas but allowed that the other factors can increase in importance in certain contexts [3]. They also suggested that pre-service teachers started ITE programmes with unrealistically high self-efficacy in their teaching skills that decreased initially due to negative persuasion experiences from mentor feedback, then recovered as mastery experiences and positive feedback accumulated [2] [3]. The 2019-20 and 2020-21 respondents demonstrated high levels of confidence expressed as self-efficacy scores [1] despite the negative impacts of anti-Covid-19 measures they identified and articulated [2]. This suggested that during the pandemic other factors enabled them to maintain positive affective states and resilience [3].

Fig. 1 illustrates a professional learning and assessment process model mapped to the ITE programme structure in place at the HEI QTS provider at the start of the pandemic. For the 2019-20 respondents, the national lockdown terminated school experience placements during the crucial last phase of training and summative assessment. They identified the negative impact of curtailed opportunities [2] for mastery, persuasion and vicarious experiences through teaching practice, mentor feedback and observation of more expert colleagues. Some 2019-20 respondents felt less well prepared to deliver a range of pedagogy strategies and assessment approaches, and to use assessment to inform planning for differentiated teaching [2] [3] [4]. Respondents from the 2020-21 cohort reported the skewed nature of their teaching experience [2] involving a short national lockdown, unpredictable local school closures, absences (mentors, learner and personal), and altered school routines and organisation. Nevertheless, their confidence was higher at the end of their programme than at the beginning and higher than the 2019-20 respondents [1]. This resilience suggested that affective states were more important than mastery, persuasion, or vicarious experiences in maintaining confidence to teach during the pandemic [3].

To be recommended for QTS, pre-service teachers in England must demonstrate they have reached minimum performance requirements in eight competencies and the expected professional teacher behaviours described in The Teachers' Standards [11]. During the pandemic this did not change. However, several procedural QTS compliance regulations, including those regarding in-person attendance in schools, were suspended. Fig. 2 illustrates Korthagen's onion model for reflection [6]. Korthagen's model positions teacher skills or competencies between factors external and internal to the

pre-service teacher. Korthagen maintained that the performance of teaching skills or competencies is contextual and cannot be considered in isolation to the environment for teaching and learning or the underlying attributes and motivations of individual teachers [6]. Successful teachers synthesise competencies and other factors to consistently make decisions that promote learning [6]. The pandemic changed the environment for teaching and learning leading to a rapid development of online pedagogies and underlying personal attributes proved important in maintaining positive affective states [3] [4].

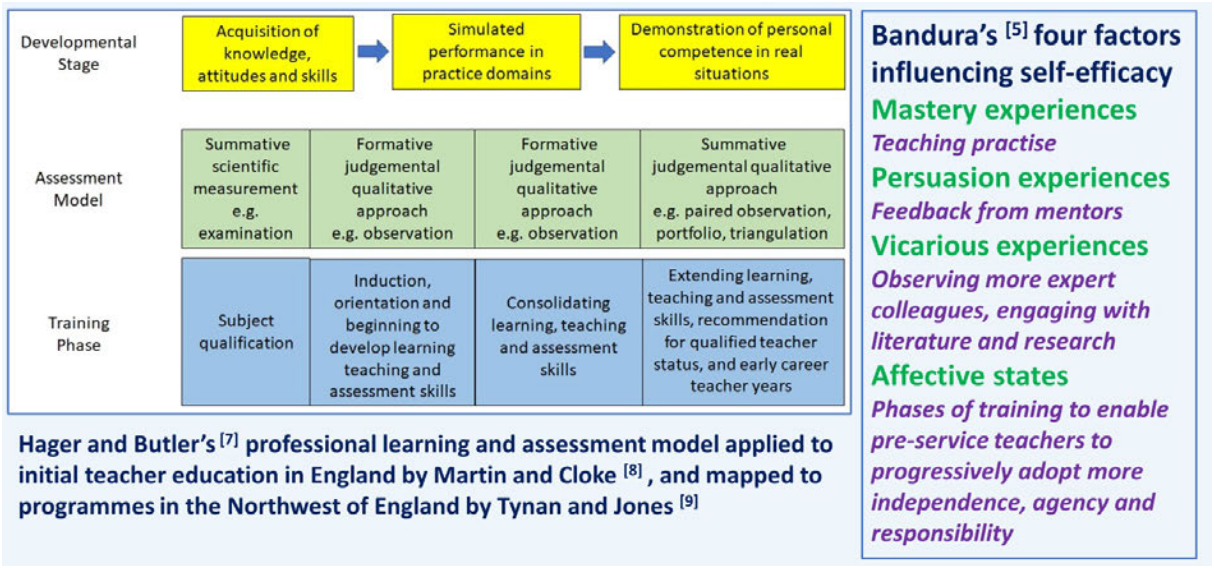

Figure 1 Opportunities for self-efficacy influencing factors on an initial teacher education programme

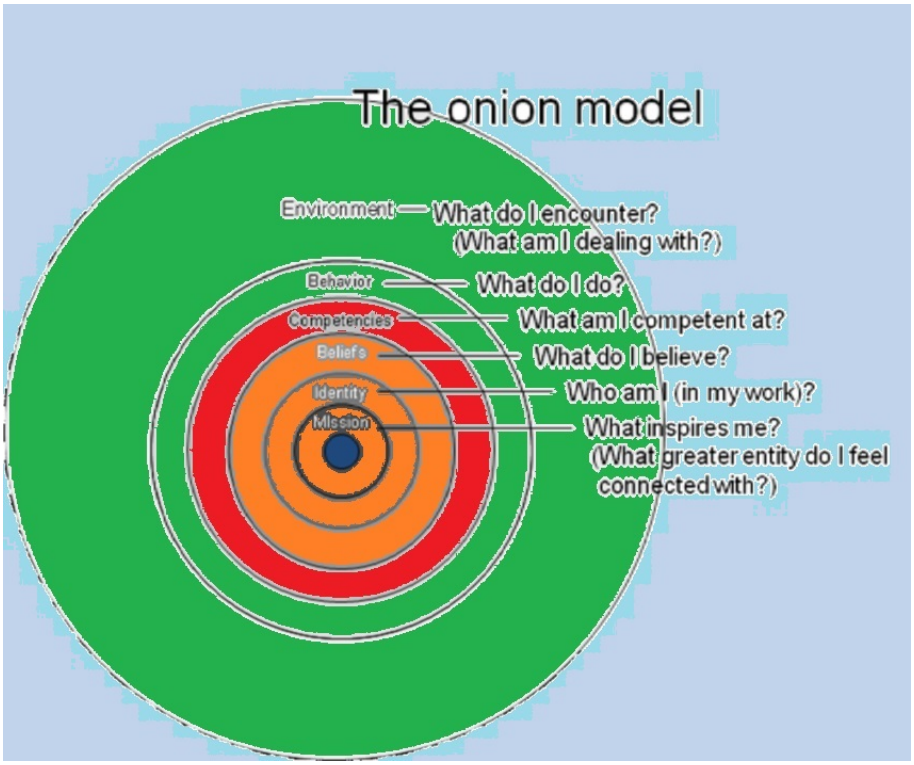

Figure 2 Korthagen's onion model for reflection [6]

Further statistical analysis is described in this paper that utilised effect size metrics based upon correlation coefficients to compare the shared variance between the self-efficacy scores ascribed to teaching skills by two groups of respondents who were recommended for QTS in England during the Covid-19 pandemic. The aim was to investigate if respondents viewed teaching skills statements as isolated or related in some way. Shared variance does not necessarily mean that the respondents linked

two skills in their minds but that would be one plausible explanation consistent with such a finding. Comparing shared variances at the end of the 2019-20 ITE programme with those recorded at the start and end of the 2020-2021 ITE programme indicated the effect of terminating the 2019-20 respondents' school experience placements on their perception of teaching skills.

2 METHODOLOGY

This paper summarises the previously reported findings from a mixed methods study involving statistical analysis [12] [13] of self-efficacy scores and thematic analysis of textual data [14] from the open responses and survey items. The methodology, data gathering and analysis for the previously reported findings are described in other IATED proceedings papers [1] [2] [3] [4]. It also reports further quantitative analysis of self-efficacy scores within and across the three anonymous online surveys.

The research question for the new analysis was: What was the impact of differences between the pandemic ITE programme experiences of 2019-20 and 2020-21 respondents on the shared variance of their self-efficacy scores for teaching skills? Shared variances can be argued to indicate, at least in part, that skills are associated in the minds of respondents.

Following British Education Research Association (BERA) ethical research guidelines [15] the HEI QTS provider catogorised the study as posing minimum ethical risks. Three anonymous online questionnaires were administered. A participant information page explained the purpose of the research and that participation was voluntary. It also explained that completing or partially completing the questionnaire implied informed consent for responses to be analysed and reported anonymously. However, participants were traceable and could withdraw their responses from the study at any time.

2.1 Data gathering

In July 2020, participation was invited from five hundred pre-service teachers who had successfully completed their Primary or Secondary Education ITE programmes at a HEI QTS provider in the northwest of England. The 2020-2021 cohort (also around five hundred) were invited to participate just after starting their PG ITE programme and once again on their successful completion of the course. Both cohorts achieved QTS during the Covid-19 pandemic. Data from all three surveys contributed to the further analysis described in this paper. The respondents constitute a self-selecting, non-random, convenience sample [16].

The surveys maintained a common structure and organisation with twenty-four pre-validated teacher self-efficacy items [17][18], in three sets of eight skills, catogorised as Pedagogy, Behaviour Management and Engagement. Participants rated their confidence to demonstrate each skill described as a self-efficacy score: 1-5 for lower confidence, and 6-10 for higher confidence levels. Another section invited participants to share anonymous demographic information and details regarding the respondent's ITE programme experiences. Open response items gave participants the opportunity to qualify or explain their scoring further. Fig. 3 summarises the timing of the surveys against the common ITE programme structure and the anti-Covid-19 measures in place at the time.

Year	2019	2020			2021				
Month	September	December	January	April	July	September	December	January	April	July
ITE Programme	Start				End	Start				End
School Placements	4 days a week	5 days a week				4 days a week	5 days a week			
Phase of Training	Induction	Practice		Demonstrating competence		Induction	Practice		Demonstrating competence	
Covid-19 Measures			All schools closed, placements terminated			Social distancing, hygiene and other measures		All schools closed, placements interrupted	Social distancing, hygiene and other measures, absences, and localised closures	
Questionnaires distributed online					2019-20 Cohort End of Programme Survey		2020-21 Cohort Start of Programme Survey			2020-21 Cohort End of Programme Survey

Figure 3 The data gathering timeline

2.2 Data analysis

The new findings were derived from shared variance matrices constructed from the self-efficacy scores for each survey administered.

In each case, the self-efficacy scores for every skill statement were correlated to the self-efficacy scores of the other twenty-three skill statements using Pearson's 'r' correlation coefficient calculation [12] [13]

inserted into spreadsheet cells. A perfect positive correlation returns a value of 1, and a perfect negative correlation -1. Consulting a Pearson's 'r' probability table indicates the probability of error, for the number of pairs of data in the sample, if the null hypothesis (H^0), that there was no correlation, is rejected.

However, as the focus of this study was the degree of shared variance, the correlation coefficient was then squared to calculate the proportion of variance (POV), an effect size metric [13]. This was then multiplied by 100 and rounded to a whole number to express the POV as the percentage of shared variance. The POVs were tabulated as matrices and paired data sets with POVs of 50% or more were marked with an asterix and the cell highlighted. The rationale for this was that these pairs of skill statements demonstrated POVs defined as large [13]. These were the most likely pairs to be perceived as associated in some way in the minds of the respondents.

3 FINDINGS

Tables 1, 2 and 3 indicate the POV matrices for the teaching skill self-efficacy scores returned by the 2019-20 respondents at the end of their ITE programmes, and the 2020-21 respondents at the beginning and end of their ITE programmes. All the correlation coefficients were positive so that all the POVs indicate shared variance and not degrees of separation. The number of respondents for the three surveys were 166, 78 and 110 and the correlation coefficients that generated POVs of 50% or more were significant with 5% or less probability of error.

Table 1 shows that the 2019-20 respondents returned self-efficacy scores with large POVs for most behaviour management skill statements and two engagement skills. There were no large, shared variances for pedagogy skills or between skills in different categories. One interpretation for this is that pedagogical skills and most engagement skills were scored in isolation to other skills. Engagement skill statement 2 demonstrated large POVs with engagement skill statements 1 and 3. This suggests that respondents associated encouraging learners to value learning with motivating learners to believe they can do well in school and motivating less interested learners.

Table 2 demonstrates a similar pattern of large POVs to Table 1. The same pattern was demonstrated by engagement skills statement 1, 2 and 3 in Tables 1 and 2. There are no skill statements that have large, shared variances with skill statements in other skill categories. The majority of skill statements that have large POVs are in the behaviour management category. There are three pairs of pedagogy skills and another engagement skills pair with large, shared variances. However, the similar results suggest that the 2019-20 respondents at the end of their ITE programmes perceived teaching skills similarly to the 2020-21 respondents at the beginning of their programmes when ascribing self-efficacy scores.

The pattern indicated in Table 3 is different to those in Table 1 and 2. There are large POVs between skills statements in different skill categories. There are many more large, shared variances between skill statements within the behaviour management and engagement skills categories. This suggests that the 2020-21 cohort's perception of the teaching skills described in the surveys changed during their ITE programmes. It also suggests that the 2019-20 cohort's view of teaching skills did not change by the end of their ITE programmes. It is reasonable to surmise that this was at least partly due to the termination of their school experience placements due to Covid-19.

4 DISCUSSION

Previous findings [1] [2] [3] [4] support Korthagen's argument that it is necessary to interpret teaching competencies in the light of underlying teacher attributes and motivations [6] (Fig. 2). Despite clearly articulating the impact of anti-Covid-19 measures on their ITE programmes, confidence in their ability to teach expressed as self-efficacy scores remained very high amongst respondents [2]. Contrary to the findings of some pre-covid pre-service teacher self-efficacy studies, confidence increased during the 2020-21 ITE programmes [2][3]. This indicated that underlying teacher attributes [6] were more influential than the altered contexts [6] for maintaining positive states and high levels of confidence in learning, teaching and assessment skills during the pandemic [2] [3]. Analysis of the self-efficacy scores and teaching skill statements [4] confirmed the direct measurable impact of curtailing school experience placements on the 2019-20 respondents' confidence to deliver particular skills. Confidence to deliver teaching skills can also depend on teacher knowledge [10] and mentoring [4] or underlying teacher attributes [6] and affective states [5]. This emphasises the importance of recruitment processes selecting able, educated, evaluative, and resilient pre-service teachers able to maintain positive affective states [5].

Table 1 Proportion of variance (POV) (r^2 X 100) matrix for the self-efficacy scores of the 2019-20 respondents (n=166) at the end of their initial teacher education (ITE) programmes

	Pedagogical skills							Behaviour management skills							Student engagement skills							
1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
	11	13	13	17	15	22	15	12	11	13	13	16	12	14	9	13	15	13	15	12	22	15	22
		30	27	31	12	25	14	13	16	20	13	14	14	15	16	22	20	14	11	24	14	13	20
			37	15	15	24	15	14	15	19	24	22	17	21	22	24	30	23	19	24	19	19	18
				21	24	30	29	23	23	25	28	31	25	24	38	26	30	38	21	30	24	35	27
					27	26	20	10	17	23	15	13	12	15	14	24	28	22	14	23	23	31	33
						32	22	17	15	21	21	23	16	13	15	14	16	22	14	26	15	23	26
							23	19	19	21	20	27	19	31	24	20	28	26	13	19	19	23	32
								24	26	26	21	20	20	18	22	14	21	19	17	28	20	26	20
									72*	66*	56*	44	50*	48	41	12	20	24	12	22	19	17	18
										62*	65*	42	48	54*	48	18	28	31	11	29	27	25	23
											61*	46	61*	45	43	19	24	28	16	28	21	26	29
												47	41	56*	57*	17	24	31	15	26	27	25	23
													62*	42	52*	20	17	32	10	25	23	24	22
														45	44	16	18	24	12	22	14	19	23
															60*	17	27	28	10	24	21	20	23
																18	24	32	16	28	26	29	26
																	57*	44	27	32	29	39	38
																		56*	30	32	47	46	42
																			38	41	46	44	43
																				45	34	22	26
																					45	27	33
																						45	43
																							47

*POV 50% or greater

Table 2 Proportion of variance (POV) (r^2 X 100) matrix for the self-efficacy scores of the 2020-21 respondents (n=78) at the beginning of their initial teacher education (ITE) programmes

	Pedagogical skills							Behaviour management skills							Student engagement skills							
1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
	39	29	28	20	17	42	23	13	7	6	12	5	5	8	3	5	11	5	11	7	14	9	12
		61*	42	58*	42	42	30	8	8	10	12	4	5	13	6	6	10	4	3	5	11	4	10
			35	40	34	36	21	5	6	6	6	2	5	7	5	11	14	7	10	15	22	10	8
				44	42	27	31	14	9	11	8	12	9	8	15	11	14	12	16	16	15	23	25
					39	37	30	4	5	6	4	5	3	9	7	12	8	11	1	5	7	0	5
						46	45	7	10	7	10	6	6	11	14	13	22	19	15	15	13	11	20
							54*	17	22	11	18	10	9	18	10	21	25	18	13	13	12	5	17
								9	16	5	11	7	8	8	10	13	11	13	14	10	6	7	16
									74*	61*	59*	55*	34	44	46	26	30	32	10	16	15	5	21
										55*	59*	52*	35	50*	54*	26	29	32	6	14	9	4	18
											63*	53*	38	49	43	27	34	28	3	15	17	2	17
												47	34	56*	39	26	30	29	6	20	14	2	14
													59*	50*	55*	22	26	38	4	19	22	8	27
														44	48	21	28	24	3	23	22	6	25
															48	19	30	28	4	20	12	1	18
																24	34	39	8	21	15	7	23
																	61*	51*	17	34	28	9	24
																		49	24	48	38	18	44
																			26	53*	39	17	38
																				34	19	19	41
																					43	16	45
																						42	45
																							48

*POV 50% or greater

Table 3 Proportion of variance (POV) (r^2 X 100) matrix for the self-efficacy scores of the 2020-21 respondents (n=110) at the end of their initial teacher education (ITE) programmes

	Pedagogical skills							Behaviour management skills							Student engagement skills							
1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
	25	26	18	27	29	21	24	16	34	25	37	22	17	25	37	33	28	21	11	24	26	19	15
		40	31	38	31	19	19	22	24	29	23	23	26	22	28	29	24	28	9	22	25	22	32
			22	30	24	25	37	14	22	18	25	12	17	21	29	25	20	23	8	19	21	20	23
				39	48	18	13	49	38	45	33	45	43	33	31	26	30	39	26	32	22	25	45
					36	36	22	36	43	40	43	39	36	36	42	49	44	36	15	32	38	38	33
						30	24	40	44	50*	39	53*	46	44	46	35	36	37	20	39	26	25	46
							40	26	40	37	36	39	31	27	36	48	46	36	11	45	46	53*	37
								9	28	20	24	19	29	22	35	35	32	27	8	35	41	28	23
									70*	77*	63*	68*	57*	52*	46	42	37	42	26	33	26	38	53*
										68*	73*	58*	54*	60*	64*	59*	59*	48	22	40	47	46	46
											60*	65*	66*	54*	51*	46	44	40	24	40	36	41	52*
												62*	48	65*	70*	58*	54*	52	29	42	44	45	45
													68*	55*	53*	50*	47	51*	34	49	36	47	56*
														57*	52*	47	45	50*	29	46	37	36	61*
															74*	49	48	52*	26	42	34	34	47
																56*	51*	55*	25	47	44	42	44
																	76*	67*	20	50*	54*	57*	44
																		63*	34	56*	60*	56*	45
																			36	57*	47	53*	55*
																				55*	30	21	42
																					62*	50*	54*
																						62*	51*
																							52*

*POV 50% or greater

POVs expressed as percentages are an effect size metric that describe the degree of shared variance between two sets of data [13]. In this study the POVs were calculated from correlations coefficients between self-efficacy scores ascribed to pairs of teaching skill statements by respondents. POV or shared variance is an effect size metric and, by definition, may still be the result of two randomly distributed sets of scores. However, all the large effect size metrics reported in this study are derived from correlation coefficients that are significant with a 5% or less probability of error if the H^0 that there is no correlation is rejected. It is plausible to suggest that a large POV or shared variance indicates that a pair of skill statements are linked in some way in the minds of the respondents ascribing self-efficacy scores. One way that this could happen would be that the respondents perceive the skills to be

overlapping or interrelated, resulting in similar self-efficacy scores. This does not preclude other factors contributing to shared variances.

Applying this reasoning to the findings suggests a plausible explanation made possible because of the quasi-experimental approach imposed by the pandemic. Fig. 3 indicates that the 2019-20 and 2020-21 respondents differed markedly in their experiences of the impact of anti-Covid-19 measures on their ITE programmes. The school experience placements of the 2019-20 cohort were terminated at the start of the national lockdown in England [1] [2] during the final stage of training and summative assessment. At this point the pre-service teachers' class contact time would normally increase significantly and they are expected to demonstrate competency, taking full responsibility for the learning, teaching and assessment of their classes over longer sequences of lessons. The 2020-21 cohort experienced altered practices and unpredictable closures and absences, but mainly remained in school throughout their final phase [1] [2].

Tables 1, 2 and 3 suggest that the final stage of training and summative assessment whilst on school experience placement is instrumental in helping pre-service teachers perceive the connections between teaching skills. Fig. 1 indicates the contribution of different phases of training to the ITE programmes provided at a HEI QTS provider and uses Bandura's framework [5] to explain the structure. As pre-service teachers take greater responsibility and develop agency during the third and final phase of training, there are significant opportunities for mastery and positive persuasion experiences through mentor feedback regarding the full range of teaching skills as a whole. It is consistent with Bandura's framework [5] to suggest that at this stage pre-service teachers would make rapid progress in synthesising isolated teaching skill descriptors and making connections between interrelated competencies.

The relationship between self-efficacy and performance of skills is not clear but Bandura's [5] work suggests that high levels of self-efficacy, the result of mastery, persuasion, vicarious experiences, and a positive affective state, is a pre-requisite of successful teaching performance. Bandura [5] and Korthagen [6] both suggest that factors other than competencies are important in developing self-confidence to teach and successful teacher behaviours. Korthagen argued that this manifests itself in the synergistic synthesis of all contributing factors described in the onion model for reflection (Fig. 3) [6]. This current study suggests that this starts to occur when pre-service teachers take full responsibility for their classes' learning, teaching and assessment over extended sequences of lessons in the final stages of school experience placements.

5 CONCLUSIONS

The impact of anti-Covid-19 measures permitted a quasi-experimental approach to research during the pandemic. It enabled the measurement of pre-service teachers' self-efficacy in teaching skills during the disrupted, altered contexts for teacher education as the pandemic progressed. The data collected were compared with pre-pandemic studies. It was also used to compare the effects on the 2019-20 and 2020-21 cohorts of curtailed and skewed school experience placements.

The data derives from participants successfully completing ITE programmes at one HEI QTS provider in partnership with schools in the northwest of England. The sample was self-selecting and a non-random, convenience sample [16]. The samples were large enough to represent the opinions of the cross-section of the primary and secondary ITE programmes invited to participate but there was no intention to extrapolate quantitative analysis findings to larger populations of pre-service teachers in England. However, the findings and discussions may have implications for any initial training programmes based upon the qualitative assessment of teaching skills described as competencies.

Previous studies [1] [2] [3] [4] established that respondents demonstrated high levels of confidence expressed as self-efficacy scores during the pandemic [1] despite articulating clearly the overall negative impact of anti-Covid-19 measures on their ITE programmes [2]. This indicates the importance of positive affective states [5] and underlying teacher attributes [6] in maintaining self-efficacy [3].

The confidence of the 2020-21 respondents improved during their ITE programmes until it was higher than the 2019-20 respondents [1]. This was due to the direct impact of terminating school experiences at the start of the 2019-20 respondents' final stage of their ITE programmes [4].

Greater confidence amongst the 2020-21 respondents was also linked to the qualitative differences in the skill statements [4]. This was more marked for skills that were more easily developed through improved teacher knowledge [10] rather than those that included elements of underlying teacher attributes [6].

Further analysis (Tables 1, 2, and 3) indicates the importance of final stages of training for pre-service teachers to integrate teaching skills and synthesise these with other factors necessary for successful teaching.

REFERENCES

[1] Tynan, R. and Mallaburn, A., "The self-efficacy of trainee teachers who were recommended for qualified teacher status (QTS) in England during the Covid-19 pandemic," *EDULEARN22 Proceedings*, pp. 484-489, 2022

[2] Tynan, R. and Mallaburn, A., "The self-efficacy of trainee teachers recommended for qualified teacher status (QTS) in England during the Covid-19 pandemic: looking for explanations," *ICERI 2022 Proceedings*, pp. 6984-6993, 2022

[3] Tynan, R. and Mallaburn, A., "The self-efficacy of pre-service teachers: lessons learned during the covid-19 pandemic in the northwest of England," *EDULEARN23 Proceedings*, pp. 2276-2281, 2023

[4] Tynan, R. and Mallaburn, A., "One effect on pre-service teachers' self-efficacy scores linked to changes in anti-covid-19 measures as the pandemic progressed in schools in the northwest of England," INTED24 Proceedings, pp. 695-704, 2024

[5] Bandura, A., *Self-efficacy: The exercise of control*, New York, NY: W.H. Freeman, 1997

[6] Korthagen, F., "Inconvenient truths about teacher learning: towards professional development 3.0, *Teachers and Teaching*," 23(4), pp 387-405, 2017

[7] Hager, P. and Butler, J., "Two models of educational assessment", *Assessment and Evaluation in Higher Education*, 21(4), 367–378, 1996

[8] Martin, S. and Cloke, C., "Standards for the award of qualified teacher status: reflections on assessment implications", *Assessment and Evaluation in Higher Education*, 25(2), 183–190, 2000

[9] Tynan, R. and Jones, R.B., "Assessing trainee secondary teachers on school placement: Subject knowledge and overall teaching grades," *Teacher Education Advancement Network Journal*, 10(1), pp 20-34, 2018

[10] Shulman, L. S., "Those who understand: knowledge growth in teaching," Educational Researcher, 15(2), pp 4-14, 1986

[11] Department for Education, *Teachers' Standards: Guidance for School Leaders, School Staff and Governing Bodies,* 2011. Available at: www.gov.uk/government/publications/teachers-standards

[12] Langley, R., Practical Statistics: for non-mathematical people, Lichfield: Pan Piper, 1968

[13] Ellis, P. D., *The essential guide to effect sizes: Statistical Power, Meta-Analysis, and the interpretation of Research Results*, Cambridge University Press, 2010

[14] Saldaña, J. *The coding manual for qualitative researchers*, Los Angeles, CA: SAGE, 2009

[15] BERA, *Ethical guidelines for educational research, Fourth Edition (2018)*, British Educational Research Association, 2018

[16] Etikan, I., Musa, S. A. and Alkassim, R. S., "Comparison of Convenience Sampling and Purposive Sampling," *American Journal of Theoretical and Applied Statistics*, vol. 5, no. 1, pp. 1-4, 2016

[17] Friedman, I. A. and Kass, E., "Teacher self-efficacy: a classroom-organisation conceptualisation," *Teaching and Teacher Education*, vol. 18, pp. 675-686, 2002

[18] Tschannen-Moran, M. and Hoy, A. W., "Teacher efficacy: capturing and elusive construct," *Teaching and Teacher Education*, vol. 17, pp. 783-805, 2001