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The perceptions of trainee teachers towards Forest School, does connection to nature matter?

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ABSTRACT

The increasing popularity of outdoor learning (OL) amongst researchers and practitioners highlighted the need to further investigate primary teacher trainees (PTTs) perception towards it and how this may be related to their nature connection. Participants were PTTs who were considering attending Forest School (FS) Training Level 1 as part of their Initial Teacher Education (ITE) course. This mixed-methods research employed the Nature Relatedness (NR) scale to measure trainees' relationship with nature. Semi-structured interviews with those who chose to attend FS training were conducted to ascertain their perceptions and attitudes towards the training. Through Thematic Analysis of interviews five themes emerged, including favourable perceptions of FS Training and OL for their future teaching career and a positive nature connection. A significant difference in the mean NR scores was identified with higher NR scores for the group who chose to attend the FS training in comparison with those who did not. .

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Forest School; teacher trainees; nature relatedness; initial teacher training; professional development

Introduction

The UK government has promoted outdoor experiences for children in and out of school (Department for Environment, Food & Rural Affairs [Defra], 2018). Outdoor Learning (OL) is an umbrella term including any experience and learning taking place outdoors (English Outdoor Council, 2018) e.g. field trips, visits to zoos, farms or teaching school subjects out of the classroom (Harvey, 2012). In England, the inclusion of outdoor learning (OL), has been advocated in Initial Teacher Education (ITE) programmes and the professional development of teachers working at any education level (Department for Education and Skills [DfES], 2006; DfE, 2021).

Previous works have focused mainly on the perception of early years practitioners (Knight, 2013; Mackinder, 2017), primary (Humberstone & Stan, 2011; Prince, 2018), high-school teachers (Christie et al., 2016; Fägerstam, 2014), headteachers (Kemp & Pagden, 2018), and other teaching staff (Kemp, 2019) employing OL approaches within mainstream education. A form of OL (Harris, 2018) that is becoming increasingly relevant within primary teachers' professional practice and development (Kemp, 2019) both in the UK and internationally (Coates & Pimlott-wilson, 2019), is Forest School (FS). This approach differs from other OL approaches, because it aims to facilitate child-led outdoor experiential learning opportunities (Knight, 2011), e.g. den building and free play (Leather, 2015). FS is beneficial for both participants

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and FS practitioners' personal and professional development, with the latter needing to acquire observational and risk assessment skills and knowledge in guiding the FS practice (Cree & Robb, 2021).

Mónus and Kiss (2019) advocated for incorporating FS into ITE and stated the need to pursue further research on this topic. Few other works have addressed primary trainee teachers (PTTs)' perceptions of OL and its perceived obstacles e.g. logistic concerns, self-efficacy, confidence, curricular requirements (Shume & Blatt, 2019). One recent qualitative study (Barrable et al., 2020) explored Scottish trainees' personal and within ITE experiences of OL, both in their personal lives and during their ITE period, focusing on their motivations and confidence. Authors concluded that both informal experiences (e.g. time in nature during childhood) and formal (e.g. first-hand mastery experiences within ITE) supported trainees' confidence and motivations to undertake outdoor teaching. Despite this recent study, PTTs' perceptions, and attitudes towards attending FS training as part of their ITE programmes and their willingness to engage with nature are not currently well understood.

Literature review

The English professional body, Forest School Association (FSA, n.d.), outlines the FS approach as holistic, learner-centred process happening regularly and over a long term in the woodland. To ensure quality in practice FSA has developed three levels of *FS training and qualifications* ranging from FS Level 1, introducing FS principles and practice, to FS Level 3, qualifying participants to become FS leaders and run FS programmes (IOL, n.d.). The content of FS training includes knowledge about children's development, natural environment, skills e.g. fire lighting, wood carving, and use of tools (Davenport, 2019; Harris, 2018).

The growing interest in FS stems somewhat from increasing concerns about children being detached from nature through 'Nature Deficit Disorder' (Louv, 2008) and is associated with the tendency for both adults and children (A. Wilkinson, 2017) to spend increased time indoors (E. Dickinson, 2013). According to the 'biophilia hypothesis' (E. O. Wilson, 1984), human tendency to be attached to nature is expressed through affection toward the natural world and care for the environment (Jordan, 2009) and it is highly influenced by learning, experiences, and sociocultural contexts (Kellert, 2008).

In this context it is important to address the concept of *relationship with nature*. Different terms have been developed to describe this concept, e.g. Human Nature Connection (Ives et al., 2017) and Connectedness to Nature (Mayer et al., 2009). Throughout this paper, the term employed is *Nature Relatedness* (NR), which refers to the individual's overall subjective sense of interconnectedness with nature and living things. NR linked to trainees' willingness to teach general outdoor teaching opportunities was explored by Barrable and Lakin (2020) and revealed a positive correlation between PTTs' NR and their willingness to participate in outdoor teaching sessions. Not all PTTs seem to be at ease outdoors, and 10 years ago, the authors postulated that the new generation of trainees lack knowledge of nature because they were mainly raised with a bias towards the indoor environment and therefore lacking personal experience and education about nature (Marcum Dietrich et al., 2011).

The Teachers' Standards are applied to settings both within and outside the classroom, including outdoor settings (Blatchford, 2017). It is therefore expected by the UK Government, following the 25 Year Plan for the Environment (Defra, 2018), the Natural Choice white paper (Defra, 2011) and the Scottish Curriculum for Excellence (Learning and Teaching Scotland, 2010), that OL, in the form of FS or fieldwork, is sufficiently integrated into teaching to contribute to a broad and balanced curriculum in schools (Carter, 2015).

The current study

Exploring PTTs' nature connection could inform the understanding of their engagement with the FS training opportunity offered within ITE. This new knowledge is much needed considering the rising demand (from 81% of surveyed teachers in the UK as of 2018) for the employment of OL within mainstream education (Wainwright & Williams, 2022; Outdoor Classroom Day, 2018). To address this knowledge gap, accounts of trainees' perceptions and attitudes towards the opportunity to attend FS training and qualifications (Institute for Outdoor Learning [IOL], n.d.) are warranted.

Individuals' levels of nature connection affect human tendency to be engaged with nature (Soga & Gaston, 2016). Previous studies concluded that experiences in nature during childhood promote experiences in nature as adults (Rosa et al., 2018) and trainee teachers' membership of eco-associations and attendance on environmental courses could predict their future teaching style (Anđić & Šuperina, 2021). Such exposure is imperative as a means to equip PTTs to develop children's nature connectedness with the aim of increasing their sense of wellbeing and consequently improving academic attainment (Waite et al., 2016). Still, there is little evidence of how an increased sense of wellbeing and improved academic attainment can be achieved in the current education system focused on targets and outcomes. The research suggests that PTTs need to be exposed to a wider range of pedagogies, including FS and OL, to engage their pupils in nature and the environment to achieve this. This exposure is pertinent in a post-COVID-19 school environment, whereby pupils and teachers are facing the aftermath (Harvey et al., 2021) of the restricted access to nature caused by health and social measures (e.g. lockdowns and online teaching) (DfE, n.d.) in place until February 2022 (DfE, 2022). The latter affected pupils' academic attainment and socio-emotional wellbeing (Tracey et al., 2022) a teachers' didactic approaches (Kim & Asbury, 2020) and restricted collaboration and movement around the classroom.

Revealing how trainees perceive themselves in terms of self-efficacy competence and confidence in teaching through the FS approach is important. *Teachers' self-efficacy* refers to their beliefs in carrying out a definite teaching task, with a definite quality level and in a definite situation (Dellinger et al., 2008). *Competence* refers to the perception of teachers' abilities (Losier & Vallerand, 1994), while *confidence* refers to the strength of these beliefs (Bandura, 1997). We expect that if trainees feel confident about being involved in the FS training and learn about the approach, they will be more likely to incorporate it into their teaching.

The current exploratory and descriptive (Salkind, 2007) research aims to illuminate pre-training perceptions and NR attitudes towards FS by comparing trainees who voluntarily chose to attend the FS training as part of their ITE programme with the NR of those who chose not to attend the training. A central research question 'How is the opportunity to be FS trained and qualified perceived by PTTs who choose to attend the training?' guided the study. The sub-question 'How is this perception linked to their *nature connection*?' guided the measure of the NR levels of the PTTs.

Methodology

The study employed a mixed-methods design (R. B. Johnson & Onwuegbuzie, 2004), including face-to-face semi-structured interviews (Johnson & Rowlands, 2012) and the NR Scale (Nisbet et al., 2009). Paradigms of interpretivism and positivism underpinned this study (Byrne, 2017). Within the interpretivist stance, interviews were employed to obtain trainees' descriptions of their perceptions and attitudes towards the FS training (D. E. Gray, 2004). Within the positivist stance, the NR scale was employed to uncover trainees' objective realities regarding their NR (D. E. Gray, 2004). The mixed methods design was employed to explore the attitudes of trainees who took up the opportunity for FS training and their perceptions of FS as a concept and useful pedagogy for their professional development. Furthermore, the NR of the group of trainees who chose to attend the FS training and those who did not were compared.

In the current study, NR scale was first employed to uncover trainees' subjective sense of connectedness with nature, followed by interviews exploring trainees' perception of FS training. Interviews as a data collection method have been prioritised (Molina-Azorin, 2016), but the two methods have been employed in a complementary way with qualitative results elaborated through the NR findings. The use of interviews and questionnaires has already been employed in previous studies exploring Scottish trainees' perceptions of OL (Christie et al., 2016) and children's experiences of FS (Coates & Pimlott-wilson, 2019). NR scale was employed to measure trainees' NR which, together with information about their past experiences in nature uncovered during interviews, would contribute to create data about participants' perceptions of their NR, (Rolfe, 2006). The use of the NR scale has already been employed in previous studies with trainees to measure their nature connection (Barrable & Lakin, 2020; Karakaya, 2017)

Other research influences, especially data collection and interpretation phases, were that of the authors' background and experiences. For the purposes of framing the authors' positionality, Author 1, at the time of writing is pursuing a research programme in Academic Studies in Education at Liverpool John Moores University (LJMU), whose main research interests include the FS approach and human-nature connection. Her commitment to the current study is influenced by prior and current experiences of supporting the delivery of FS sessions and academic studies. The other authors' combined knowledge and experience also helped frame the study. Author 2 has developed a Natural Curriculum approach to learning in schools and works to help develop FS areas in schools and delivers FS sessions to teachers, trainees (including participants in this study), and schools. Author 3 has a research interest in the psycho-social benefits of natural play, and Author 4's work focuses on natural capital, ecosystem services, and human-natural systems interconnection.

To mitigate potential researcher bias (Kelly, 2004) during data collection and analysis, a reflexive stance was assumed, involving author 1's conscious self-reflection or scrutiny of potential factors influencing those research phases (Bourke, 2014; Hennink et al., 2020). Despite her lack of a primary teaching background and, limited contact with the study participants, Author 1 held an etic perspective (Holmes, 2020), and was firmly involved with trainees' stories. Furthermore, Author 1's previous experiences with FS sessions made her gravitate towards a more emic perspective (Fetterman, 2008), remaining 'at a distance' to the participants. The latter enabled her to acquire visual information legitimating questions during

interviews (Naaeke et al., 2011). Finally, her personhood, personal involvement with FS and background in Psychology influenced the data analysis process, while trainees' experiences influenced the author's personhood (Dwyer & Buckle, 2009). Authors 2, 3, and 4 contributed to the study ideation, guiding all research phases with their academic expertise and practice.

Methods

Ethical approval was received by the Research Ethics Committee of LJMU, where the research was undertaken.

Study settings, recruitment and consent

Interviews and NR Scale data collection were conducted on the premises of the LJMU. PTTs received an invitation email explaining the nature of the study and were given a hard copy of the NR scale, including a consent statement. Subsequently, a subset of participants who completed the scale agreed to participate in individual interviews.

NR data collection

The cohort of BA and PDGE trainees was invited to complete the NR scale (Nisbet et al., 2009) in paper format. Trainees were recruited through an initial invitation email, and face-to-face contact

during a typical university taught lecture. To distinguish between trainees who decided to attend the FS training and trainees who did not, a preliminary question was added to the scale completion, '*Do you intend to take part in the FSA training?*' They responded in a written form ('Yes' or 'No'). NR is a quantitative measure of affective, cognitive, and experiential dimensions of human relationship with nature. It is a 21-item scale where participants expressed their agreement with each statement using a 5-point Likert scale, from 1 (*disagree strongly*) to 5 (*agree strongly*). The dimensions of participants' NR were measured through 3 subscales:

- NR-Self—measures individuals' internal identification with nature, thoughts and feelings about the connection with nature and includes 8 items e.g. 'My relationship with nature is an important part of who I am.'
- NR-Perspective—measures individual's attitudes and behaviours towards nature and includes 7 items e.g. 'The state of non-human species is an indicator of the future for humans.'
- NR-Experience—measures physical familiarity, comfort, and desire to be in nature and includes 6 items e.g. 'I enjoy being outdoors even in unpleasant weather.'

This instrument was selected over others available measures of human-nature connection (for a review see Tam, 2013) because of its multidimensionality and the construct validity and reliability of its data. According to Nisbet et al. (2009), NR had a good internal consistency, with a Cronbach alpha of .87. In the current research, the Cronbach alpha coefficient for the NR scale was .83 showing good internal consistency.

Interview data collection

During semi-structured interviews trainees' perceptions and attitudes towards participation in FS training were recorded and conducted by Author 1 on University premises between October and December 2019. The average length of interviews was 13 minutes and ranged between 8 and 21 minutes. Participants were asked questions about their previous knowledge of the FS approach (e.g. how, and when they heard of it), their intention to attend the FS training, and different motivations, expectations, and attitudes towards it. Trainees were also asked about some aspects of their experience in nature (e.g. access to natural areas, activities, type of relationship with nature) during their childhood and adolescence. The last topics discussed during the interview were trainees' self-perception of their self-efficacy, confidence, and competence in attending the FS Training and its predicted impact on their future teaching career.

Participants and selection criteria

The research focused on PTTs pursuing a BA (Hons) degree in Primary Education or a Postgraduate Diploma in Education (PGDE) ITE courses leading to Qualified Teacher Status (QTS) at a Northwest of England University (1st selection criterion). The trainees were offered the opportunity to attend an introductory level course about fundamental principles and FS practices (FS Training Level 1). Sessions included the development of practical skills, knowledge of flora and fauna and FS principles (2nd selection criterion). After pursuing this training in ITE, graduates may wish to attend the FS Training Level 3, which will qualify them to establish and deliver FS in their workplace.

The research employed a purposive sampling (Guest et al., 2006) of participants who respectively decided to:

- (1) Participate in the FS Training Level 1 (group 1).
- (2) Not to participate in the FS Training Level 1 (group 2).

Table 1. Samples and grouping for NR and interviews data collection.

	Number of trainees		
	Number of BA	Number of PGDE	Total number
Trainees' population	50	120	170
Trainees' total NR Sample	39	61	100
Part of the NR sample that choose to participate in the FS training	12	39	52
Part of the NR sample that did not choose to participate in the FS training	11	9	28
Total interviews' sample that chooses to participate in the FS training	12	-	12

Trainees' samples and grouping for NR scale and interview data collection are represented in [Table 1](#)

The participants' (73 F; 15 M; 13 preferred not to disclose their gender) age on average was 22.92, and their age range was between 18 and 39 years old, while 12 trainees (12%) preferred not to disclose their age.

Out of the 100 trainees who undertook the NR scale, 12 agreed to participate in interviews (all were from group 1). Theoretical saturation (Guetterman, 2015) was applied to decide the sample size for interviews. Therefore, the participant recruitment stopped when no new information was seen in the collected data.

Quantitative data analysis

NR scale data presented missing data. The case processing summary revealed that 7/100 or 7% of the cases presented missing values (11 or 0.524%). Missing values were tested employing the Little's Missing Completely at Random (MCAR) test and values resulted to confirm the hypothesis that those data were MCAR ($p = .160$). Therefore, NR missing data were handled using the Expectation Maximisation option, before performing the quantitative analyses.

NR scales total scores were calculated as means. Descriptive statistics for the group were calculated. The normal distribution of the scores was reviewed through a Shapiro-Wilk Normality test. A difference between the mean NR scores of the two groups of trainees was examined through an Independent Samples T-Test.

Qualitative data analysis

Audio recordings of the interviews were transcribed, and participants' names were substituted by pseudonyms. Interview transcripts were reviewed and analysed according to the qualitative analysis method Thematic Analysis (TA) (Braun et al., 2019; Clarke & Braun, 2017). TA has been employed in an inductive way, with codes deriving directly from the interview data (Hsieh & Shannon, 2005), including both manifest and latent aspects (Braun, 2013), and with themes interpreted within ITE and the employment of FS within mainstream education as specific contexts.

Furthermore, the trustworthiness and reliability of the coding process can be supported by the employment of a qualitative data analysis software (QDAS), Nvivo12, as a tool for data handling (Hafeez-Baig et al., 2016; Siccama, 2008). QDAS allowed the researchers to explore data sets, with full access and knowledge of the content not reached when this process is carried out manually (Gilbert, 2002; Welsh, 2002). Data analysis richness, depth, and insight have been provided by the employment of NVivo strategies such as attributes to describe demographic information of participants (e.g. trainees' places of provenance in [Table 1](#)) and visual representation of initial themes (e.g. Thematic Map in [Figure 1](#)) (Siccama, 2008). Additionally, qualitative data analysis trustworthiness and reliability were supported by employing an across or between method methodological triangulation (Casey & Murphy, 2009; Heesen et al., 2019; V. Wilson, 2014), where qualitative and quantitative methods are employed to collect data. In the current study, interviews uncovering trainees' perceptions and attitudes towards FS training have been employed as a qualitative data collection method and the

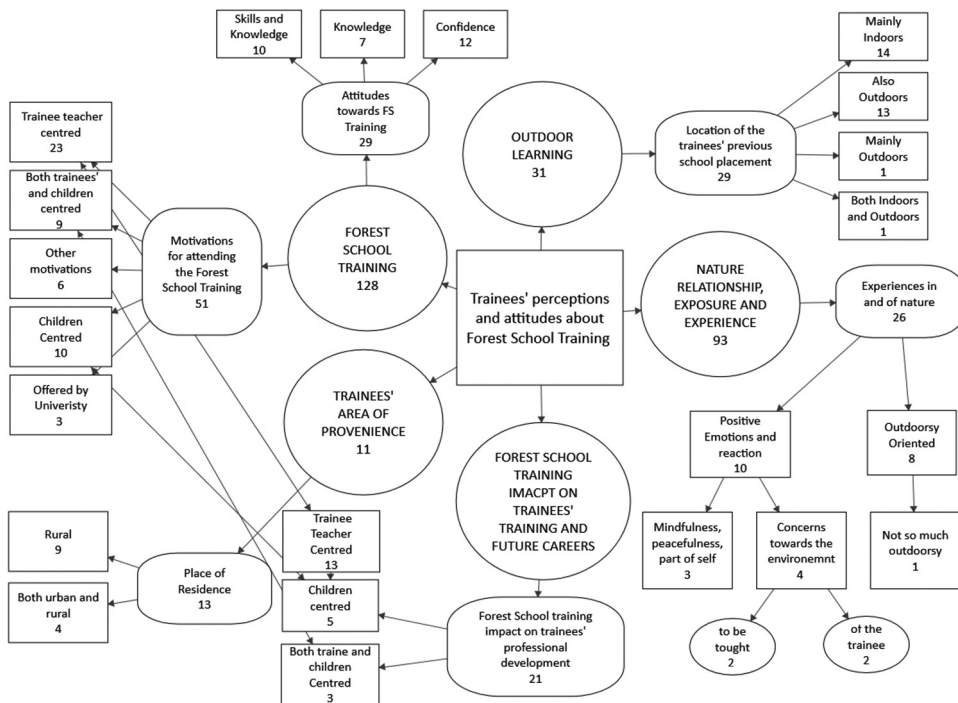


Figure 1. Preliminary Thematic Map and references numbers of codes and themes.

NR scale as a quantitative one to measure their levels of NR. Furthermore, trainees’ nature connection has been explored quantitatively through the NR and qualitatively through interviews asking them to describe their relationship with nature.

To analyse interviews, first, the reading and re-reading of interview transcripts was employed by Author 1 making annotations of initial ideas, and then assigning of initial codes to the parts of the transcripts relevant for addressing the central research question across the entire data set. The following step was to gather all the relevant codes into initial themes and relevant subthemes, which were summarised in an initial thematic map (Figure 1). The next step was defining and naming each theme. A report of developed themes and subtheme examples can be read in the following section.

Preliminary results

Quantitative results

The research aimed to test for a difference in the mean NR level between the group of trainees who chose to attend the training and the group of trainees who did not. To compare the two groups’ NR mean scores, an Independent Sample T-Test was found to be robust to achieve this scope with non-parametric data.

NR scores for trainees who chose to attend the training were significantly higher ($N = 52, M = 3.67, SD = .48$) than those who did not ($N = 28, M = 3.34, SD = .50; t(78) = 2.91, p = .005$, two-tailed).

Qualitative findings

TA of the 12 audio-recorded interviews with trainees revealed five major themes: 1. Motivations and values around FS Training, 2. Personal experiences and values around OL, 3. Predicted FS impact on trainees’ training and future career, 4. Trainees’ area of provenance, 5. Nature relationship, exposure,

and experience. The first three themes respectively encompassed how trainees perceived the FS Training opportunity offered to them, their personal experiences with OL within the educational system, and their predicted impact of being FS trained on their future teaching career. These three themes helped respond to the central research question, uncovering the perception of FS training from trainees who chose to attend it.

The fourth and fifth themes described the place where the trainees spent their childhood and adolescence and their present and past relationship and experiences with nature. These two themes helped respond to the sub-question concerning interviewees' engagement with the natural environment. A description of the themes, and interview excerpts from BA trainees' part of the group who decided to attend FS training ($N = 12$, 10 F), are presented in the following section.

Theme one: motivations and values around FS training

One developed theme was FS Training. This theme helped to uncover the perception of FS training of trainees who chose to attend it. All 12 interviewees expressed their interest in attending the training. Just two trainees expressed that their participation would depend on the University workload.

9 interviewees, when asked about when and how they heard about the FS approach and training opportunity, responded that it happened through University during an open day, a taster session offered by one of the lecturers or school placement. 3 interviewees stated they learned about it outside University.

Trainees' motivations for attending the FS training were also related to their current trainee teaching role ($N = 10$), second to their future pupils ($N = 6$), and third to both aspects ($N = 6$). Generic motivations, including the training being fun and worthwhile and being offered by the University, were also stated. As regards the relevance of the training, one interviewee said, *'I just think it's [the FS training and qualification] something extra that you can have and it's not going to hold you back [from teaching] by having those extra skills (sic)'* (Amy). Another remarked the relevance of it for both teachers and the pupils: *'I think it's (sic) important for teachers to have a lot of experience and ... lots of tools in their kit to make lessons engaging and to adapt quickly for all children who have different interests and different attainment levels'* (Josephine).

Trainees described their attitude towards the idea of being FS trained in terms of knowledge ($N = 6$), skills ($N = 5$), and confidence levels ($N = 9$). One trainee expressed her need to improve her skills and knowledge saying, *'I think I have some knowledge and skills [of FS]. I'm okay with that. But there's lots of equipment that I've never seen before, you know, like the Kelly Kettle (sic)'* (Amy). The improvement of confidence and skills is denoted as *'definitely ... confidence I think it will improve. ... and ... I guess the skills that come with it [the FS training] are not the kind of skill that you would really get usually developed in a primary school'* (Clare).

Theme two: personal experiences and value of OL

Trainees' perception of FS training and qualification emerged through their personal experience with OL. Most trainees' ($N = 9$) thoughts on OL were favourable. One trainee considered it as *'really valuable. [...], I think it really puts a different spin out alone [on teaching]. Children seem more enthusiastic [about OL] from what I've perceived ... myself (sic). ... Children really enjoy working in the outdoors. Something that really benefits them'* (Mark).

Trainees reported little OL experience during their time in Primary ($N = 8$) and Secondary ($N = 2$) school as children and adolescents. One trainee remarked, *'No, no, my primary school didn't have forest school. We had a forest, but we never did [OL]. And often, we often weren't allowed to play in the forest because I don't know why but it was raining it getting muddy and you won't be allowed in (sic)'* (Amy). Another trainee underlined the opposite experience, saying: *'as a kid [...] I had an outdoor area in my primary school. [...] Like on a Friday in the summer. [...] And we have I think it was boat, like*

a boat model out there [in the school ground]. I mean, I can [remember] things made out of whole nut trees' (Josephine).

One trainee described her adolescence as characterised by hikes and the attendance at an outdoor education camp: 'When I was in school, we did a hike towards Spines trip. [...] ... rock climbing, bouldering. [...] a night trail where we went into the forest and we ... had to hold onto ropes that were laying around. And then when I went into secondary school, I did Duke of Edinburgh' (Allison).

5 trainees reported OL experiences during their time in Higher Education (HE). One trainee referring to her University stated that 'in this [University] campus, we had so much outdoor space to use. So ... we took ... little groups in pairs around the campus and ... we ... planned these math trails [...]' (Clare). Only one trainee reported being involved in OL outside HE, on a farm.

When asked to describe the location of their previous school placement, most trainees ($N = 9$) depicted it as mainly indoors. For example, one trainee reported that during her placement, 'They did one walk and they do have facilities. They do have a big open field. But so, [...] maybe they didn't let them out as much (sic)' (Beth). 9 trainees reported that there were some activities that primary schools ran outdoors such as 'one outdoor day, that was sport themed. They had one every half term I think, every class it was a different ... subject every time they did it' (Josephine). Only one trainee described his placement as having 'lots of outdoors. On a Friday morning ... I helped out with a sports club before school, and it was outdoors as well. [...] Obviously, weather permitting' (John). Just one trainee described her placement as flexible between indoor and outdoor settings saying that 'It was ... a kind of ... open classroom. They had really big patio doors. And then children could just flow in and flow out. [...], there's some children don't want to get involved [in outdoor activities]. [OL] It gives them that option to go outside. [OL] It's not as constricting (sic)' (Megan).

Theme three: predicted FS training impact on trainees' training and future career

The third theme regarded interviewees' predictions of the impact of FS training on their ITE and future teaching practice. This theme helped further to uncover the perception of FS training of interviewees.

Most interviewees ($N = 9$) described positive effects of taking the FS training, including the fact that 'it makes you ... clearer on what are you trying to explain to children [while teaching] and things like that [...] But I think, I like being outdoors and ... in nature, it is ... the biggest teaching resource you can probably find. And being able ... to utilise that [is a resource too]' (Clare). Another trainee described the impact of being FS qualified as 'it gives me more pedagogical training. It gives me a lot of new ideas and a lot of new strategies especially when outdoor learning which can be tricky' (Emily). Sarah remarked on the possibility of employing FS at a cross-curricular level. The value of the qualification when applying for jobs and for improving Curriculum Vitae content was expressed by two trainees.

3 trainees specified the positive effects FS has on pupils. One of them remarked that FS is 'good for [...] the children to be able to calm down. And to take them outside if they're getting a bit restless. Take them outside to enjoy' (Amy).

Finally, two trainees remarked that the training would be beneficial for both themselves as future teachers and their pupils. One specified that 'every day is a school day, even if you are a teacher, you have to build your own skills and develop new ways. Because [the children] they're going to be people in your class, who learn in different ways, and you have to be able to facilitate all the types of learners that you will be teaching (sic)' (Beth).

Theme four: trainees' areas of provenance

To better understand trainees' relationship and engagement with nature, interviewees were also asked to define their local area or where they spent their childhood. All trainees ($N = 12$) described those as predominantly rural or both urban and rural environments. None of the

Table 2. Trainees' type of places of upbringing.

Trainees' Pseudonyms	Type of place of upbringing		
Allison	-	Semi-urban	-
Amy	Urban first and then rural	-	-
Beth		-	Rural
Clare		-	Rural
Emily	Rural and urban	-	-
Hannah	-		Rural
Jenna	-		Rural
John	-		Rural
Josephine		Semi-urban	-
Mark	Urban first and then rural	-	-
Megan		-	Rural
Sarah		Semi-urban	-

trainees described their place of upbringing as predominantly urban (Table 2). One trainee stated that she *'lived in both [an urban and rural area] [...]so I lived quite a lot of my life in the countryside, and I only moved to an urban area about eight years ago'* (Emily). An example of a rural place of upbringing is given by John, who said, *'I'm ... from the countryside. So, I'm from a farming background. So, I have lived outside a lot whenever I was younger (sic)'* Even when trainees were living in a semi-urban environment, such as Sarah, who *'grew up in a town that is a seaside [...],'* they had access to green areas.

Theme five: nature relationship, exposure, and experience

Trainees' relationship, exposure, and experience with nature is the fifth main theme developed from interviews. 11 interviewees expressed positive emotions and described their experience in and of nature as enjoyable. Most interviewees ($N=7$) described themselves as 'outdoors-y' with statements such as *'I think that I prefer being outdoors than indoors'* (Beth). In contrast, only one trainee preferred indoor activities, stating *'I won't (sic) really go that much in nature for my play, my sport, my Gaelic[type of football]'* (Hannah). One trainee associated her experience in nature with feeling mindful and peaceful saying *'Then when I started doing it [spending time in nature], it did become more about mindfulness for me and just not being in such an enclosed space. [...] I think everything that [comes is] some true peacefulness from the outdoors'* (Megan).

Two trainees also mentioned environmental issues when asked about their experience of nature. One trainee stated that *'I always think of the environment. Yeah, nature [is] very important. Making sure animals don't crave [food] and things like that (sic).'* (Emily). In contrast, another trainee expressed unawareness about environmental issues saying, *'I'm not very educated in issues like global warming and, and things like that. [...] [Environmental issues] is probably something I'd like to learn more about (sic)'* (Sarah).

As regards the activities carried out while in nature, PTTs mentioned a vast variety such as *'walking, playing'* (Hannah) *'hide in the trees and climb the trees'* (Amy) *'take my bike and cycle [...]* *go camping quite a lot'* (Amy), *'building things in the wood'* (Mark). Trainees experienced those activities during their childhood or adolescence ($N=12$) and adulthood ($N=3$).

Trainees shared that they had special places in nature that were manmade ($N=3$) or natural ($N=9$). A summary of trainees' special places in nature can be seen in Table 3.

Overall, trainees described their relationship with nature positively. One trainee remarked that nature had been *'a huge part of my life'* (Clare). Two trainees mentioned the fact that they liked going for walks. Clare linked practical experiences in nature to the development of a positive relationship with nature: *'I just love walking And I think that [walking and similar activities in nature] just made me love it'*.

Table 3. Teacher trainees' special place in nature.

Trainees' Pseudonyms	Special Place in Nature	Classification
Allison	<i>'The beach'</i>	Natural
Amy	<i>'Park with the stream'</i>	Natural
Beth	<i>'The beach'</i>	Natural
Clare	<i>"My grandparents' house"</i>	Man-Made
Emily	<i>'Different types of nature'</i>	Natural
Hannah	<i>'The hill'</i>	Natural
Jenna	<i>'One field where there was a tree you could climb'</i>	Natural
John	<i>"My parents' house"</i>	Man-Made
Josephine	<i>'The roadstead'</i>	Natural
Mark	<i>'The farm'</i>	Man-Made
Megan	<i>'One of those peaceful places outdoors'</i>	Natural
Sarah	<i>'All the beaches'</i>	Natural

Discussion

This paper contributes to the emerging body of literature exploring the employment of FS within ITE programmes (Mónus & Kiss, 2019). Trainees who chose to take part in the training showed favourable perceptions and attitudes, describing FS training as something that they are eager to learn more about and they would employ within their future teaching practice. Furthermore, trainees who chose to attend FS training showed significantly higher mean NR scores than trainees who did not.

Qualitative findings showed that trainees who chose to attend FS positively perceived the prospect of being FS trained. This finding is supported by previous work where trainees showed favourable perceptions and attitudes about learning outside the classroom experiences during ITE (Spencer & Maynard, 2014). Despite barriers (e.g. behaviour management, weather conditions), which have previously been reported elsewhere (Dillon & Dickie, 2012), trainees recognised the impact of being FS qualified on their professional skills and subject knowledge and pupils' learning. A previous study (Spencer & Maynard, 2014) on trainees' placement in informal settings support these positive aspects. As for the FS training, participants expressed the need to further develop their knowledge, competence, and confidence towards it. This finding is again supported by previous research (Hawxwell, 2019), where trainees showed an overall positive perception of OL with some concerns regarding feeling uncomfortable during OL delivery and time, space, weather limitations and risk and safety management. Overall, trainees described OL as an important approach to student learning (T. Gray, 2018). Only some participants reported OL experiences during their time in the education system because it is not included in the English national curriculum (Passy et al., 2019) and only advocated through the Learning Outside the Classroom Manifesto (DfES, 2006).

Interviewees' predictions of the impact of the FS training on their ITE and future teaching practice included a description of the FS approach as pedagogically different and rich (Waite & Goodenough, 2018), supporting pupils' emotional wellbeing (McCree et al., 2018). Trainees remarked on the impact on pupils of the employment of FS within their teaching practice both regarding the cross-curricular employment of the FS approach and the experience in nature and enjoyment offered. Those aspects concur with those already reported by primary teaching staff interviewed on the impact of FS on pupils (Slade et al., 2013). Furthermore, the FS qualification is perceived as valuable by schools and an advantage for trainees when applying for teaching jobs. This finding conforms with the increased employment (B. Dickinson, 2015; Lightfoot, 2019) and marketisation (Leather, 2018) of the approach by primary schools.

Interviews also revealed trainees' experiences in nature as happening in their places of upbringing, which were either rural or towns with access to nature. Descriptions of outdoor activities and favourite places in nature delineate trainees' previous experiences in nature. Some reported outdoor experiences were related to trainees' time within the educational system as students and even in HE. Overall trainees' relationship with nature was described as positive and linked to pleasant emotions and experiences. The relevance of a special place and positive experiences (Chawla & Derr, 2012) in

nature during childhood or adolescence appears to motivate adults' engagement with nature (Chawla, 2007; Rosa et al., 2019). Moreover, most of the trainees had a rural background or were from semi-urban areas with access to nature, fostering greater time spent in nature (Gifford & Nilsson, 2014).

Experiences in nature during trainees' early life, including childhood and adolescence, might be interpreted as leading to their favourable perception of being FS trained and qualified. Frequent early life exposure to nature boosts people's connection with nature and their time spent in it (Duron-Ramos et al., 2020; Ward Thompson et al., 2008). For instance, one trainee (Clare) reported that walking was one of her major outdoor activities during her early life, recognising that as the reason for nature playing a considerable role in her life. Furthermore, qualitative data about engagement and early life experiences in nature of trainees who chose to attend FS Training Level 1 have been supported by the NR scale results, according to which their subjective sense of connectedness with nature was higher than trainees who choose not to attend the training. Therefore, these results might indicate the relevance of data about reported previous experiences in nature and NR of trainees in informing trainees' perceptions and attitudes towards the training.

Limitations

Limiting factors in this study include the employment of purposive sampling for collecting NR data and limited access to participants for both collecting NR and interview data. The employment of a purposive sample limits the generalisation of quantitative results. Despite the recruitment for interviews targeted all the BA and PGDE trainees who chose to participate in the FS training, only BA trainees who had chosen to participate in training agreed to be interviewed. This would be linked to the COVID-19 outbreak, and lockdown measures and University campus closing which led to online teaching and limited access to PGDE respondents. Therefore, the sample size for interviews ($N = 12$) is set within this context.

Future research

Future research would be needed to address the above-mentioned study limitations. Limited access to participants could be reduced by interviewing both trainees who choose to attend the FS training and those who did not with specific regarding to their nature connection, focusing on their prior experiences in and of nature. This data would potentially allow for a better understanding of the differences in nature connection and NR scores between the two groups. If a link between NR and trainees' engagement with FS training will emerge, this might indicate that an increased exposure to nature of trainees could increase their interest in continuing with further FS training opportunities. The issue of NR data generalisation could also be addressed by the employment of the NR to explore nature connection of trainees randomly selected from other English Universities offering the FS training Level 1 to their trainees.

Research should also consider the challenges faced by the Universities offering FS training and qualifications to their trainees. FS qualifications at Level 3 correspond to academic A levels (Knight, 2018). Therefore, the FS training courses are not compatible with the levels 4, 5, 6 and Postgraduate Levels taught within Universities in England. Kemp (2019) specified that even when employing FS within primary education, it is impossible to apply FS in its purest form, but some adaptations need to be enacted by providers. Therefore, future explorations of adaptations and barriers to the employment of FS training and qualifications within the HE system is required.

Conclusions

The study found that trainees keen on attending FS training have a favourable pre-training perception of this experience and had a stronger connection to nature. Trainees also reported the employment of the FS approach as valuable for their professional development, enriching their future teaching practice, facilitating their employability, and enhances for pupils' learning. A positive relationship and experience in and of nature and favourable perception towards OL were also reported.

Despite the study being limited by the lack of information on the control group's perspective, findings from interviews provide a valuable insight into the perception of trainees who chose to attend FS training, reporting their attitudes, motivations, and expectation towards the approach and its employment within their professional practice. Finally, the results of this study have several practical implications:

- Consideration of applicants' characteristics, including previous experiences in nature and with OL, interest in and enthusiasm for FS and their perceptions and attitudes towards its relevance to their future practice, could be included in ITE selection processes. This aspect would ensure that future graduates from ITE courses can offer schools increased OL skills (Leather, 2018) and, thus, support graduates' future employability.
- Trainees' perceptions and attitudes towards FS training could support the design of an ambitious curriculum in ITE. Training courses offered within Universities can be either delivered by FS leaders who are part of the University staff or by external FS training providers. Furthermore, an agreement could be reached locally between HE and external providers to avoid unfair competition.

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Ethical guidelines

The study went through rigorous review and obtained ethical approval from the LJMU Research Ethics Committee.

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