Minute by Minute: Building Student-Teacher Relationships in Initial Teacher Education

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Abstract

In their training, student teachers are introduced to the effectiveness of formative assessment, which relies on the teacher having in-depth understanding of their learners. Ironically, this personal understanding is not always modelled in university sessions; with tutors struggling to learn the names, let alone the individual needs of their learners. In this action research project, an inductive approach was used to evaluate the development of student-teacher relationships through written dialogue, building on research on the 'one-minute paper'. The teacher completed a reflective diary throughout the project and the students' views on the value of written dialogues were collected by means of a questionnaire. Students were positive about the benefits of using 'one-minute papers', and content analysis of the questionnaire responses drew out themes around personal student-teacher relationships and how these can support student learning. This paper concludes by discussing the importance of making learning explicit for student teachers and using teaching approaches that nurture student-teacher relationships (such as 'one-minute papers') to empower students to become partners in the business of learning.

Key Words

Initial Teacher Education; One-Minute Paper; Student-Teacher Relationship; Action Research; Student Agency; Student Partnership.

Introduction

The 'one-minute paper' (OMP) is a strategy that emerged in the 1980s to engage students in a dialogue with their teachers about their learning (Angelo and Cross, 1993:148; Stead, 2005). In this strategy, students are normally asked to write brief answers to no more than two questions given by the teacher, usually in the last minutes of a teaching session. The questions often revolve around what the student has learned in the session and whether they have any questions about the learning material. This short piece of writing is then collected by the teacher and used to influence the content of future teaching sessions. Some users of this technique also follow up individual comments by writing short responses or making individual contact with students.

This article reports on an action research project to evaluate the effectiveness of an OMP approach in developing student-teacher relationships within the context of initial teacher education in England. Although a number of research studies have noticed deepening student-teacher relationships through the use of OMPs, research in this area has largely been focused on student outcomes; this research project puts student-teacher relationships at the heart of the study. The research was driven by my personal struggles with transitioning from a career as a primary school teacher to educating student teachers. As a primary school teacher, I knew the names of all the children in my class by the end of day one; as a teacher educator, I felt hampered in supporting my students' learning by knowing only a handful of students' names, let alone all their learning needs. This research was framed in order to address what I perceived as a lack of relationship with my students.

Citation

> Research Question:
> *Does the use of OMPs foster personal relationships that enable the teacher educator to know the individual learning needs of his/her student teachers?*

Literature Review

Early research on the use of OMPs reports on the direct impact of this approach on student learning outcomes. Almer, Jones, and Moeckel (1998) investigated the impact of OMPs on the quiz scores of over 850 undergraduate accountancy students in the USA. They found that students in classes where OMPs were used achieved significantly higher in essay-type quizzes than their counterparts. Having experimented with the use of OMPs for a number of years, Chizmar and Ostrosky (1998) sought to test out their belief that OMPs benefit the performance of all abilities of students. Their research, on over 570 undergraduate economic students (again in the USA), concluded that the use of OMPs resulted in a significant gain in students' knowledge, independent of the instructor or the initial ability of the student.

More recently, Patka et al. (2016) researched the impact of Exit Cards (a method also used to collect students' written responses after lessons). Their research, on 40 undergraduate students studying research methods in the USA, described how OMPs enabled teachers to tailor materials throughout a course according to the students' understanding; this was seen as more beneficial than responding to end-of-module feedback. Moreover, and of importance for this paper, Patka et al. (2016:665) suggested that this method might build rapport between students and their teacher.

Rose (1996:12) also touches on the benefits that OMPs may bring to student-teacher relationships. Rose (1996) describes his use of response cards (similar to OMPs) to develop mentoring relationships, writing anecdotally about students knowing that he cared about their understanding. Inspired by Rose's response cards, Costello, Weldon and Brunner (2002) researched the impact of using the cards with ten classes of students in five departments of a university in the USA. They gathered evidence by asking students and teachers to complete surveys in the middle and at the end of a semester. Although the number of positive comments from students varied significantly depending on which class they came from, many of the comments related to the means of communication the cards offered. In addition, two of the teachers voiced that they wanted to continue to use the cards in order to get to know their students.

The importance of opening up channels of communication between teachers and students is not restricted to literature on OMPs. Christie et al. (2008:571) interviewed first-year undergraduate students from non-traditional pathways of entrance to an 'elite' UK university. These students reported feeling the loss of personal relationships with teachers that they had known whilst studying at colleges of further education. Other research has also investigated how UK students communicate with their university teachers when they need support. Stephen, O'Connell and Hall (2008: 454) interviewed 24 undergraduate personal tutors and ran six student focus groups to investigate experiences of personal tutoring, finding that many students thought their personal tutor was too busy to spend time with them when they had a problem. Clegg, Bradley and Smith (2006:111) carried out 14 semi-structured, in-depth interviews with a diverse set of students. Rather than building up personal relationships with their teachers, these students spoke of not accessing help at university because they associated this with failure. In their conclusions, Clegg, Bradley and Smith (2006:112) surmised that 'pedagogic supports should be mainstreamed so that students do not have to ask for

help, but rather support is factored into good practice'. This was one of my motivations for employing OMPs: to integrate opportunities for building relationships with my students within high-quality teaching.

In their review of research on student-teacher relationships in higher education, Hagenauer and Volet (2014) conclude that more research is needed into the quality and impact of student-teacher relationships, believing that current research is hampered by a lack of conceptual or theoretical frameworks. They say that 'little is known about how interactions are perceived, evaluated and experienced by students and teachers' (Hagenauer and Volet, 2014: 382). The research reported in this article adds to the dialogue in this field by capturing perceptions of the relationship between this teacher and her students when using OMPs.

Methodology

The participants for this action research project were drawn from two seminar groups within a cohort of second-year undergraduate students. They were studying for a degree in Primary Education with Qualified Teacher Status at a Church of England Foundation University. The University has a large focus on educating students going in to public service, including teacher education, and has achieved a Silver Award for Teaching Excellence as part of the Department for Education's framework in recognising and rewarding high quality teaching in higher education. The project ran for the duration of a series of six two-hour teaching sessions on Primary Mathematics, taught by myself from September to December 2016. Although it was expected that all students would complete the OMPs in the sessions, the students were given the choice of participating in the research project itself; all 37 of the students agreed to participate, but only 32 students were present to complete the questionnaire at the end of the project.

The OMPs consisted of pre-prepared sheets (Figure 1), headed with the student's name and their photograph. The aim of including photographs was to support me in linking the comments on the sheets with the students who sat before me in subsequent sessions. After each session, I wrote a comment in return to each student. The same sheets were re-used in each session so that they mapped the conversation between each individual student and myself as the course unfolded. As the aim was to enable me to build relationships with the students and get to know their individual needs, the OMPs were not anonymised. Whilst recognising that this may have distorted what the students chose to write, a personal relationship could not develop without me knowing who wrote the comments.

Figure 1. Example of a blank OMP.

The students were given time to complete the OMPs at the end of sessions; literature shows that, contrary to the name of the strategy, this requires more than a minute (Angelo and Cross, 1993:152; Stead, 2005:125). I structured the final minutes of each session in such a way that the students did not feel that completing the OMP was delaying them; I usually asked the students to write about their key learning and whether they had any unanswered questions. As the OMPs were named, I handed them directly to the students at the beginning of sessions so that other students could not read the communications.

I used the comments on the OMPs to shape future sessions. For example, questions that were raised on the OMPs at the end of one teaching session were addressed at the beginning of the next session. OMPs were only one part of the assessment for learning strategies that I employed in the normal course of my teaching (other strategies included opportunities for students to respond to questions or voice viewpoints within the session). However, I was interested to discover if using written dialogues would also help me to build relationships with those students who are usually less confident in sharing their thoughts (McArthur et al., 2011:19; Patka et al., 2016:660; Rose, 1996:12; Stead, 2005:124).

I kept a diary throughout the project to record my reflections. To elicit the opinions of the students on using OMPs, they were asked to complete a questionnaire at the end of the last teaching session. Anonymous questionnaires were chosen rather than face-to-face interviews as I hoped this would encourage the students to be candid in their responses (Wellington, 2015:198). It should be noted that the questions in the questionnaire reflect my view of teaching (Gray, 2014:354); this bias in the questioning has the potential to skew the students' responses and needs to be taken into account when interpreting the results.

When analysing the data from the questionnaire, I chose an inductive approach using content analysis as I was aware that my project would generate a large amount of written data and that content analysis would enable me to draw out salient themes (McNiff, 2016:198). I analysed the responses to the questionnaire by generating 'inductive codes' (Johnson and Christensen, 2014:596) to conceptualise key themes; similar concepts were grouped together, and these groupings were iterated further, distilling into categories. The categories were then validated by using them to complete a higher-level of comparative analysis of the original data.

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One difficulty I needed to address in this project was validating results when researching my own practice. When presenting the findings in this paper, it was important that I kept the process of analysis transparent so that it was open to scrutiny. I therefore chose to construct analysis maps (Lochmiller and Lester, 2017:177) to show how codes were grouped into categories and how themes were formed. These maps also show the quantity of statements collected within each code. Although I appreciate the need for caution when using quantitative methods within qualitative research (Newby, 2014:489), it seemed important to capture the number of occurrences of any idea.

This project received a full ethical review by the university in line with BERA ethical guidelines (British Educational Research Association, 2011). Ethical considerations were taken into account throughout, particularly considering the possible conflicts between my role as researcher and my role as teacher. I ensured that teaching was not changed solely due to the needs of the project. I also made it clear to the students that participating in the project would not impact on their grading for the module. Research shows that OMPs are beneficial to student learning, with very few negative affects; these only tend to arise if the approach is over-used (Costello, Weldon and Brunner, 2002:30; Stead, 2005:125). This evidence led me to believe that the students' learning was much more likely to benefit than be harmed. In addition, OMPs fall under the category of formative assessment, which has been shown in many studies to benefit low-attaining learners or those at some disadvantage (Black and Wiliam, 1998:59). This gave me the confidence to conclude that the strategy involved in this project was inherently inclusive.

Findings

The 32 students who completed the questionnaire were asked their perceptions of the impact of the OMPs on student-teacher relationships and their learning. The quantitative data from the questionnaires indicates that the large majority of students perceived the OMPs as having a positive impact on the student-teacher relationship and their own learning (see Table 1). However, it is possible that these answers were given by the students to please the tutor, even though the questionnaires were anonymised.

Table 1. Table showing quantitative responses from the student questionnaire.

Question	YES	NO	No strong preference
1. Did your relationship with the tutor change as a result of completing the OMPs?	30 (29, in a positive way)	1	1
2. Did you feel that the tutor knew you sufficiently well to support you in your learning?	32	0	0
3. Have the OMPs enabled you to make progress in your learning?	30	2	0
4. Would you like to continue using the OMPs for the rest of this year's maths sessions?	30	1	1

The questionnaires asked the students to explain each of their answers and analysis of the reasoning behind these responses was needed to add more validity to the results. As evident in the analysis to follow, the rich qualitative data shows that most students perceived that the OMPs had fostered personal relationships that enabled the teacher to support them in their learning. Content analysis of the students' answers to question one, mapped in Figure 2,

shows emerging themes. The numbers against each code indicate how many students commented on each idea. During thematic analysis, co-occurring codes (Johnson and Christensen, 2014:598) were noted in the students' responses to individual questions in the questionnaire, hence the total in the list of codes exceeds the number of completed questionnaires.

CODES		CATEGORIES	THEMES
I felt my understanding was valued.	3	The students felt valued.	
I felt valued as a person.	3		
Relationship became more personal.	8	The students felt that they had a personal relationship with the tutor.	DEVELOPMENT OF PERSONAL RELATIONSHIPS
I felt I could be open about feelings/difficulties.	6	The students felt that they could communicate openly with the tutor.	
OMPs enabled communication with the tutor.	4		
I felt supported by the tutor.	3	The students felt supported by their tutor.	
Tutor became aware of our understanding.	6	The students felt that the tutor knew the level of their understanding.	ASSESSMENT OF LEARNING
I valued the individual feedback from the tutor.	5	The students felt that the tutor tailored their feedback.	
Future sessions were adapted according to our needs.	3		TEACHER INTERVENTIONS
My questions were answered.	1	The students felt that the tutor responded to needs.	
My concerns were addressed	1		
Not sure if change was due to OMPs.	1	The students did not believe that the OMPs made a positive change on the student-tutor relationship.	
No change.	1		
Created friction as we often disagreed.	1		

Figure 2. Analysis Map of responses to question 1 - Did your relationship with the tutor change as a result of completing the One Minute Papers?

Three main themes arose from the content analysis for question one for those 29 students who felt that the OMPs had improved the student-teacher relationship. They valued how the OMPs had facilitated:

- Development of Personal Relationships
- Assessment of Learning
- Teacher Interventions

Of the three students who were not convinced that the OMPs had positively impacted on their relationship with the teacher, one spoke of what they perceived as friction between them and the teacher over opposing viewpoints. One student felt that there had been no change in the relationship and one student talked of a positive relationship, but conjectured that this was due to the teacher themselves rather than the use of OMPs.

These same three themes emerged from the analysis of question two, when the students explained why they felt that the tutor knew them sufficiently to support their learning (see Figure 3).

CODES	CATEGORIES	THEMES
The OMPs facilitated communication. 3		
Student-tutor relationships developed. 1	The students felt that the OMPs enabled a positive student-tutor relationship to develop.	DEVELOPMENT OF PERSONAL RELATIONSHIPS
I felt comfortable to ask questions/be helped. 3		
Tutor knew where my strengths/weaknesses were. 9	The students felt that the tutor was able to assess their level of understanding.	ASSESSMENT OF LEARNING
The OMPs enabled the tutor to track my learning. 1		
Tutor changed content of sessions as a result of our difficulties. 3		
Tutor built on my understanding. 3		
Learning was personalised. 2	The students felt that the tutor adapted their teaching according to their level of understanding.	TEACHER INTERVENTIONS
Students were given individual support. 7		
I was given feedback that developed my learning. 3		

Figure 3. Analysis Map of responses to question 2 - Did you feel the tutor knew you sufficiently well to support you in your learning?
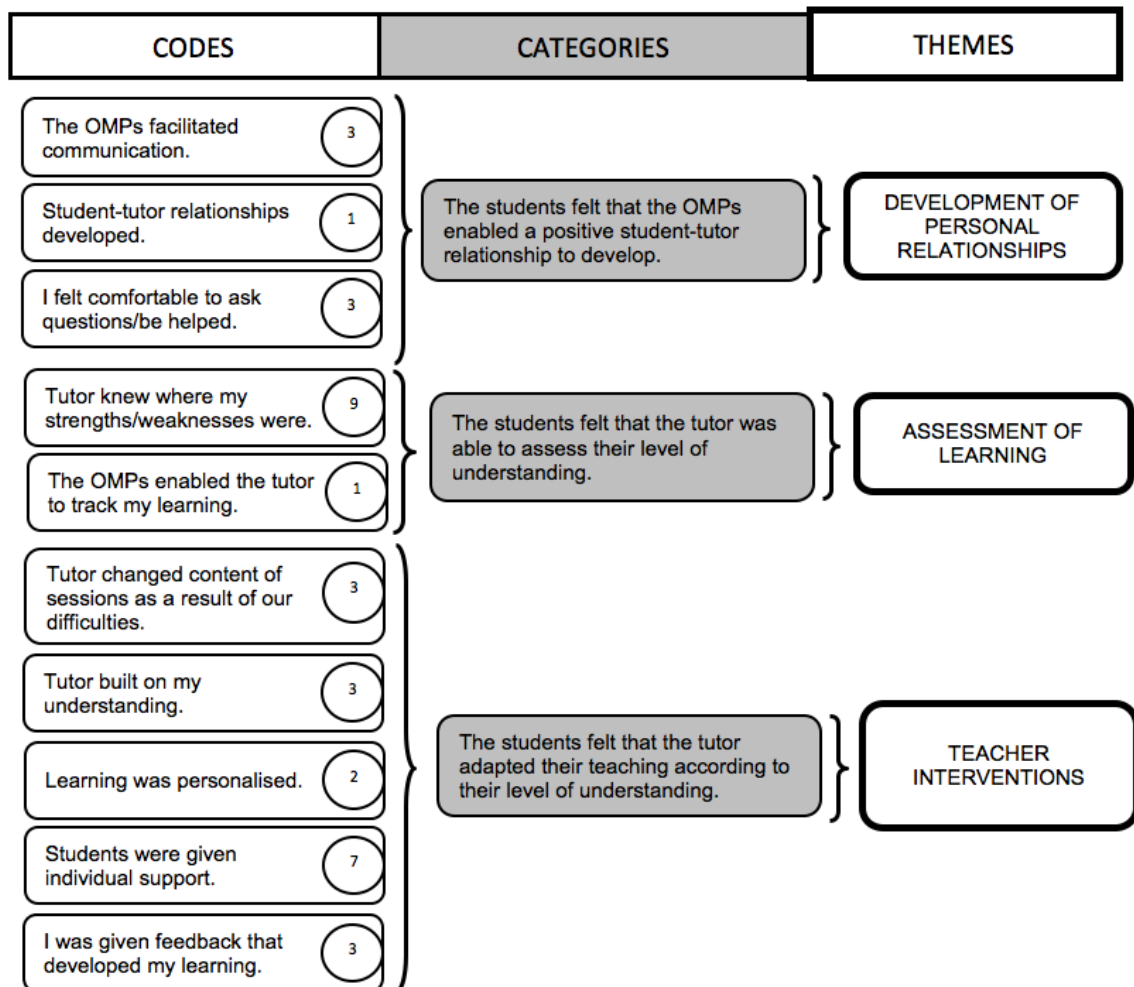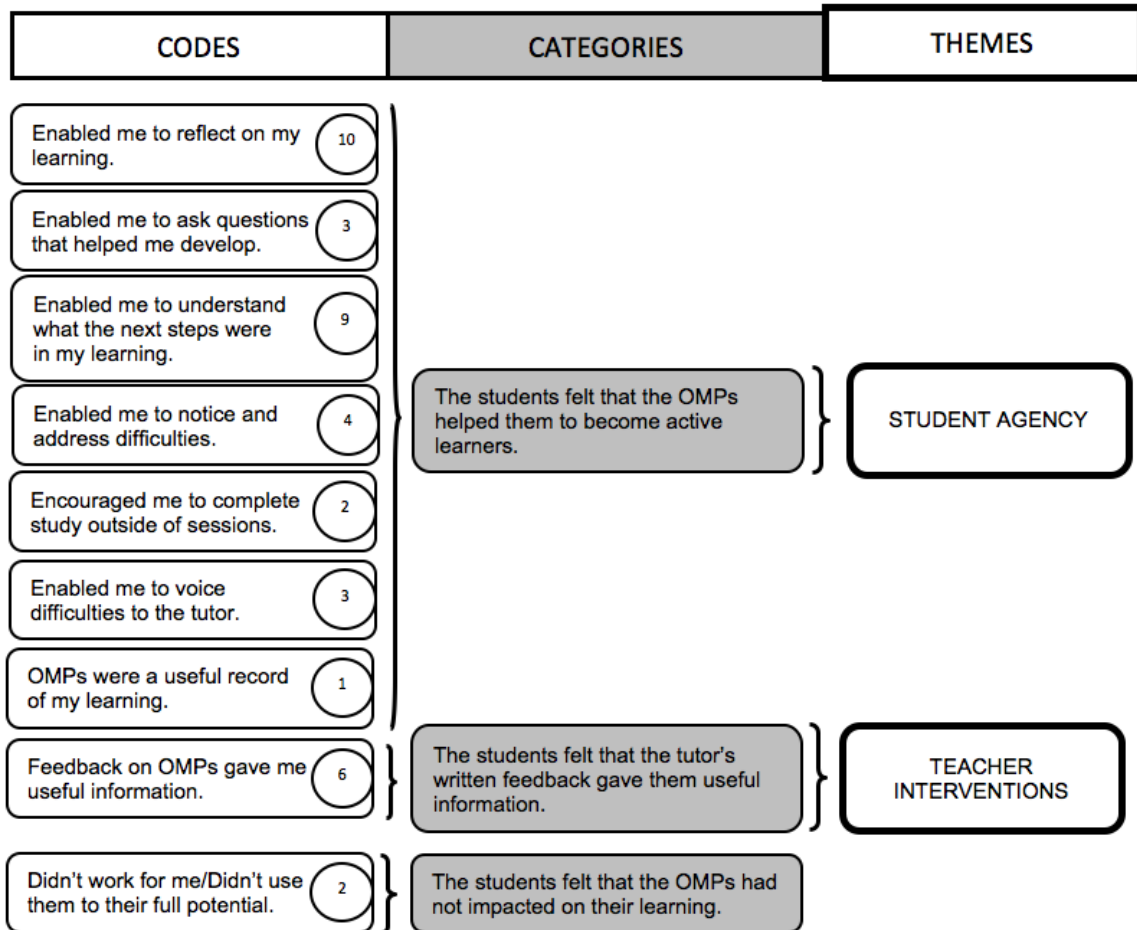
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The 'Teacher Interventions' theme also emerged from analysing the students' responses to question three, whether the OMPs enabled them to make progress in their learning (see Figure 4). However, a more common theme voiced by the students for this question was that of 'Student Agency'; although they did not directly use this term, the students explained how the OMPs had enabled them to become active in their own learning.
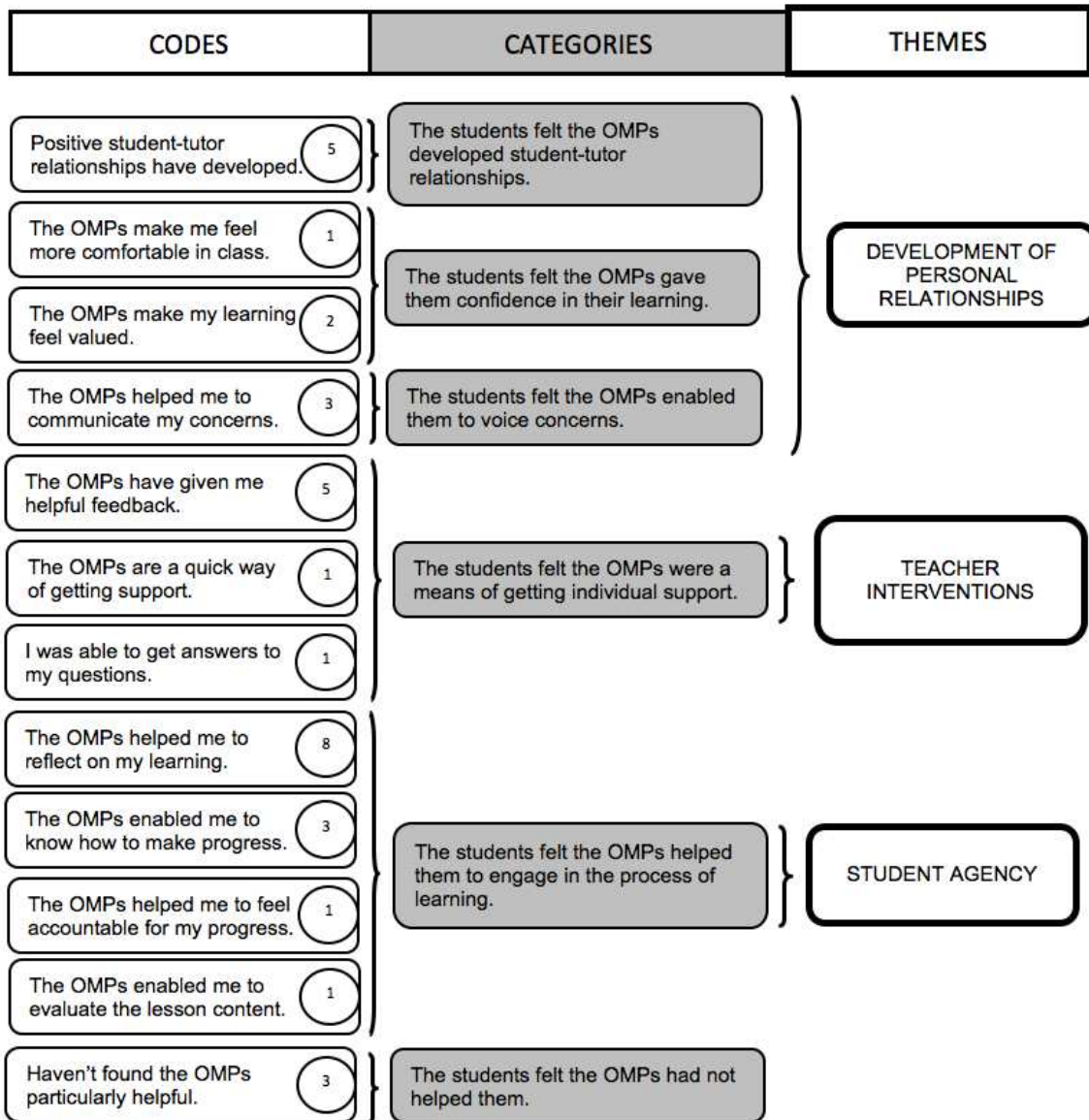

Figure 4. Analysis Map of responses to question 3 - Have the OMPs enabled you to make progress in your learning?

When asked, in question four, whether they would like to continue using OMPs for the remainder of their sessions in Primary Mathematics that year, recurring themes were evident in the students' responses (see Figure 5). Many students spoke again about the benefits of OMPs for the development of personal relationships, to facilitate teacher interventions and enable student agency.

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Figure 5. Analysis Map of responses to question 4 - Would you like to continue using the OMPs for the rest of this year's maths sessions?

It is perhaps unsurprising these four themes arose from the questionnaire as the questions guiding the students to reflect on student-teacher relationships and their learning. Notwithstanding this possible bias, the positivity in the students' comments adds weight, nonetheless, to the argument that they believed OMPs had strengthened the relationship with the teacher so that she knew their individual learning needs (see Table 2 for examples of the comments made by students for each of the four themes).

Table 2. Example comments from the student questionnaire.

Theme	Example comments
Developing Personal Relationships	'I feel more appreciated in the session and feel happy that the tutor has taken time to know me. It has made me feel more comfortable to say if I have an issue in the session.' 'I felt as if [the tutor] cared about each of our learning.' 'I believe it helped build relationships and allowed frequent communication. I feel it added a personal element to the sessions which is missing in other sessions.'
Assessment of Learning	'I feel that the one-on-one communication that we had through the feedback sheet allowed [the tutor] to gain an insight into my knowledge.' 'Useful feedback showed that she understands my learning better and is keeping track of it.'
Teacher Interventions	'I think that the learning is a lot more personal as [the tutor] really considered our learning and even went through any common issues or misconceptions in the following sessions.' 'The answers on the OMPs were aimed directly towards me, meaning my learning was being personally targeted.'
Student Agency	'I really enjoyed reflecting on my own learning. I found it hard at first but the process has got easier which is good.' The OMPs 'made me think about the things I've found difficult and encouraged me to research more at home which has enabled me to progress.'

Discussion

As reported above, many students perceived that the OMPs had facilitated:

- Development of Personal Relationships
- Assessment of Learning
- Teacher Interventions
- Student Agency

Within an environment where personal relationships were perceived to be developing, the students believed that OMPs enabled both the teacher, and themselves, to assess their learning; they had the confidence to reveal their learning needs to the teacher, but also used the OMPs to reflect on their own learning. They felt that this shared understanding of their learning needs resulted in interventions from the teacher, but many of them described how they also became agents in developing their own understanding. This shared endeavour, of building understanding, served to strengthen the personal relationships further.

Hackenberg (2010:236) believes that the development of caring student-teacher relationships depends on incorporating activities where students and teachers have opportunities to relate to one another. From her interest in how children learn mathematics, she coins the phrase, 'mathematical caring relations' to describe 'a quality of interaction between a student and a teacher that conjoins affective and cognitive realms in the process of aiming for mathematical

learning' (Hackenberg, 2010:237); this relationship develops as teachers devise appropriate challenges (based on a deep knowledge of their individual students' conceptions) and students respond to teacher's interventions with their own questions and actions. This description of a caring relationship resonates with observations from my study where students spoke of valuing that I knew about their learning and responded to their needs. Indeed, my diary was full of notes about how I should adapt future sessions in the light of the information I gleaned from the OMPs. However, my diary also records that I had reservations about the strength of the relationships that I was building. Although the OMPs helped me to learn all the students' names, I recorded that I still found it difficult to recall the written dialogue between us as the students sat before me; my memory did not have the capacity to store all the individual conversations. I would need another strategy in place to enable me to draw on this information about the students' learning during the teaching session itself. Perhaps I needed to keep the OMPs beside me as I taught (although this would prevent students writing on them throughout the session). Alternatively, and if I insisted on students sitting in the same seats each session, I could annotate a seating plan with the key themes arising from individual students' OMPs.

OMPs appear a useful strategy in developing relationships as they facilitate a dialogue between individual students and the teacher. The to and fro of comments enables, what McArthur et al. (2011:3) describe as, a dialogical relationship which supports the social construction of learning. Bartell (2011:54) explains how caring relationships enable opportunities for teachers to share their understanding of a concept with students at the same time as seeking to understand the students' current understanding of the concept. This was a feature of some of the dialogues I held with students on the OMPs; their writing enabled me to assess their understanding, point them in the right direction and then see their growing understanding in their responses in future sessions. In fact, my diary records how useful I found it to scan through all the comments on an OMP before I responded to the next comment from the student.

The OMPs gave a forum to enable openness on both sides of the relationship that is not fully available in my normal seminar teaching. The dialogue on the OMPs did not just facilitate students in writing about their understanding and learning needs, it also facilitated me in opening up to the students. I could respond personally with help and encouragement, and I was able to share more about myself personally through the tone of my responses. My diary records an aspect of this personal relationship as I reflected on how often I added a smiley face after a comment to a student only to discover that, in the next session, students were particularly looking out for one. As well as creating closeness to students by, for example, learning their names, Quinlan (2016:105) states that relationships can be developed when the teacher opens up to students by sharing feelings and experiences. Anderson and Carta-Falsa (2002:137) also discuss the importance of teachers devising activities that enable students and teachers to reveal their 'personal sides' so that relationships develop where students can take risks and become active learners. OMPs could be said to offer a deeper way to do this than discussions with groups of students in seminars. However, my study also highlighted that a small proportion of students did not believe that the OMPs enabled them to build relationships with their tutor. Investigating the barriers to the development of personal relationships between teachers and students in seminar settings would be a useful study to uncover the variance of approaches needed in a teacher's toolbox in order to reach the spectrum of dispositions that are likely to exist amongst a cohort of students. It would be useful to interview students who voiced the opinion that OMPs did not develop the student-teacher relationship. In gathering their perspectives on the types of approaches they believe

would improve student-teacher relationships and their learning, further studies could be designed to test the value of such approaches against the use of OMPs.

Witt, Goode and Ibbett (2013:30) argue that personal channels of communication between students and teachers are particularly invaluable within Initial Teacher Education in Primary Mathematics so that teachers can address students' anxieties about their own level of mathematics at an early stage. In my experience, when student teachers are anxious about their own levels of mathematics, disengagement can result. However, for those students who said that they felt safe within the personal relationship that had been nurtured in my sessions, the OMPs gave them a place to voice their concerns. This gave me the opportunity to coax and encourage when they were struggling. Indeed, a number of students wrote in the questionnaire that the OMPs empowered them to develop their own learning. My concern now is how to ensure that *all* students feel empowered to lead their own learning. I want to investigate whether practices, such as the use of OMPs, create relationships where students are equal partners in their learning, rather than consumers (Quality Assurance Agency for Higher Education, 2010:7). Although agency is an important trait for all students within higher education, it is particularly important for students who will follow careers as primary school teachers. Student teachers needs to learn to reflect on their own learning, as well as the learning of their pupils, in preparation for a career where teaching learners about learning will need to become their pedagogy (Philpott, 2014:6).

Swinkels, Koopman and Beijaard (2013:26) argue that student teachers are more usually focused on their skills and understanding, and how to deliver content to their own pupils, rather than considering how children learn. Swinkels et al. (2013) further believe that these students need to be supported in developing learning-focused conceptions if they are to be effective teachers. Using OMPs could be one approach to support student teachers in considering how they can support children's learning. However, this would need to be made more explicit rather than simply using OMPs to highlight their own understanding as I had done. This could be achieved by exploiting the similarities between OMPs and the 'marking' of children's written work. Despite teacher-workload issues, written feedback remains an important tool in supporting children's learning (Department for Education, 2016). The value of dialogic marking, although common practice in primary schools in England, is under-researched (Elliott et al., 2016:17); it would therefore be valuable for student teachers to consider the benefits and drawbacks of written feedback.

Concluding Thoughts
The purpose of this project was to discover whether OMPs would enable me to foster personal relationships with my students where I knew their individual learning needs. I was hoping to develop a two-way relationship where I knew more than just the names of the students, and where they would feel comfortable communicating their learning. Analysis of the data suggests that most of the students felt that this relationship was achieved.

Although an under-explored area, Hagenauer and Volet (2014:379) state that research shows student-teacher relationships are needed for all students to succeed in their learning, but particularly for those who are in danger of dropping-out of university studies; student-teacher relationships (although not as important as relationships with their peers) enable students to feel that they belong. Thomas (2012) states that one of the factors that contribute to students' feelings of belonging, are relationships with teachers where their individual contributions are valued and they can ask for help. In contrast, Thomas (2012) concludes that students who do not have such relationships are more likely to leave university. It is therefore important that

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university teachers find approaches that nurture such relationships. This study shows that OMPs warrant close consideration amongst these approaches.

There are many limitations to this study, notwithstanding the sample size and whether the students were completely candid in their responses to a researcher who was also their teacher. This study has not closely examined those few students who did not find the OMP approach particularly helpful. Neither has it considered computer software that might make OMPs easier to administer; nor whether electronic dialogues can be as rich as this low-tech alternative. All of these topics would make worthy topics of future study.

Although this study suggests that OMPs can result in greater student agency, this still falls short of the current drive towards considering students as partners in learning in UK universities (HEA, 2014). The successes I saw in using the OMPs encourage me to use them again but, in future, I will give the students regular opportunities to assess the value of the approach for themselves. I will support them in considering the implications for them as developing teachers as they conduct written dialogues with their pupils. I will also need to take greater cognisance of the students who do not find the OMPs helpful, to discover their perspective on what changes need to be made to enable them to partner with me in their learning.

Having shared my research with colleagues, there is interest in using OMPs on a larger scale, so the next step would be to consider how this might be possible over a collection of modules or an entire course. There are a number of barriers to moving forward with this, notwithstanding some colleagues' scepticism about the amount of extra time needed to complete written dialogues with their students. The benefits of using OMPs could also be watered down if their use moved from a novelty activity to a feature of every seminar. In developing student-teacher relationships, there must surely remain an element of individuality so that students are making relationships with the tutors themselves rather than with a corporate face. This means that, instead of course leaders making decisions about whether to use OMPs universally, all tutors need to be part of the discussion around how to build relationships with students that result in successful learning.

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