UWS Academic Portal

Beginning science teachers' expectations of their mentors

Day, Stephen P.

Published in:
Mentoring Science Teachers in the Secondary School

Published: 15/12/2020

Document Version
Peer reviewed version

Link to publication on the UWS Academic Portal

Chapter 3 Beginning science teachers' expectations of their mentors

Stephen P. Day

Introduction

In initial teacher education (ITE) programmes in the UK and many other countries, the mentor is expected to perform a dual role; a supporter*,* as a beginning teacher develops their classroom practices and an assessor against the relevant teacher standards (for example, in England the Teachers Standards (Department for Education (DfE), 2011), Professional Competencies (General Teaching Council for Northern Ireland (GTCSNI) 2018a), the General Teaching Council for Scotland's Standards for Registration (GTCS, 2012), and the Professional Standards for Teaching and Leadership (Welsh Government, 2018)). Therefore, to act as an effective supporter and assessor, as a mentor you need to consider a beginning teacher's expectations, of you in supporting their development as an effective teacher.

This chapter aims to allow you to reflect upon your mentoring practices. It asks you to consider what a beginning teacher might reasonably expect from you as a mentor, the characteristics and some actions of effective/ineffective mentor. Next, the chapter introduces Hudson's constructivist approaches to effective mentoring. That is followed by some effective mentoring actions to support beginning teacher expectations of you, such as: enabling a beginning teacher to self-reflect and discuss their expectations of themselves and expectations of you, conducting an induction programme, suggesting ways to balance working (teaching) life with other commitments and supporting the beginning teacher to meet teacher standards. Finally, attention is drawn to the fact that you might not always be able to fulfil a beginning teacher's expectations of you.

Objectives

At the end of this chapter, you should be able to:
1. Reflect on key characteristics of mentoring from a beginning teacher's perspective;
2. Consider some effective and ineffective actions of a mentor;
3. Understand constructivist approaches to establish effective mentoring;
4. Support a beginning teacher's expectations by getting to know their expectations of you and undertake mentoring actions to aid their expectations, such as supporting them in

adjusting in the school environment, planning, teaching and observing others or being observed, suggestions on balancing home and working life, and supporting them to meet the teacher standards;

5. Discuss some unreasonable expectations by a beginning teacher of a mentor.

1. Self-reflection on the characteristics of effective mentoring from a beginning teacher's perspective

Before you start reading about some of the expectations a beginning science teacher may have and how you can support their expectations, Task 3.1 encourages you to reflect on your perspectives on the main characteristics of an effective mentor of a beginning teacher.

Task 3.1 Reflecting on your perspectives on the main characteristics of mentoring a beginning teacher

Reflect on the following questions:

1. Write a list of what to you are the main characteristics of a good mentor of a beginning teacher.

2. Do you possess some, most, all of these characteristics?

3. Recall some positive and negative feedback (if any) on your mentoring by beginning teachers, from your previous mentoring experiences. What lessons did you learn from them?

4. Based on the answers to questions 1-3, list some key characteristics that you think a beginning teacher should be expecting of a mentor?

5. Next, compare your effective mentoring list with the information contained in Table 3.1, by answering the following questions:

   - What list of characteristics of an effective mentor did you come up with that resemble the characteristics of an effective mentor identified in Table 3.1? How will you strengthen some of your perceived mentoring characteristics in future?

   - Which characteristics from Table 3.1 did you not have on your effective mentoring list? Do you wish to develop these characteristics in your mentoring? If yes then how, and if not then why not?

   - Are there any barriers in developing some of the characteristics of an effective mentor? What can you do to overcome such barriers?

Table 3.1 Some characteristics of an effective and ineffective mentor: Adapted from the work of Anderson (2011).

Characteristics of an effective mentor	Characteristics of an ineffective mentor
Availability	Distant and unfriendly
Consistency	Unapproachable
Honesty	Unreliable
Professionalism	Intimidating
Assertiveness	Unpredictable
Effective communicator	Overprotective
Resourcefulness	Incapable
Reliable	Unreliable

2. Mentoring actions from a beginning teacher's perspective

Mentoring a beginning science teacher necessarily requires the mentor to adopt a twin tracked approach to the way they co-construct a beginning teacher's professional identity, since they are to be a teacher first and a science specialist second. More generally, a beginning teacher's concerns about planning include the science curriculum, especially their engagement with areas of general science with which they may not be familiar, given their own academic subject preparation and field experiences (Ingersoll, 2003; Chapter 10, ppxx), as well as having to cope with how best to teach practical techniques along with health and safety issues required in science teaching (Chapter 14, ppxx) et cetera. Therefore, a beginning teacher will expect a

mentor to guide them to understand and overcome planning and teaching challenges, which places an onus on the mentor to help the beginning teacher navigate these challenges. In order to effectively plan and enact science pedagogy, a beginning teacher will also expect their mentor to support them in making a variety of decisions with regards to what content to teach, how best to teach it (see Chapter 7), as well as what and how to assess the learning (see Chapter 7, ppxx and Chapter 12) that emerges from that teaching. In supporting them to plan and teach science autonomously, you will want to act as a facilitator rather than a dictator.

The expectations of a beginning teacher of their mentor to support them with planning and teaching challenges might vary in terms of the balance between direction, challenge and support, in part because of the beginning teacher's prior science-based learning and scientific experiences with previous and current mentors, confidence in using their subject knowledge in developing their pedagogical content knowledge (PCK), and life circumstances et cetera. Therefore, the first few weekly mentoring meetings should be designed to help a beginning teacher to agree on what level, type and manner of support they require from their mentor (see Task 3.4, Section C for an example of how this might be operationalised).

A beginning teacher's expectations of effective mentorship may also be linked to their values, attitudes and beliefs towards the mentoring process itself, in much the same way that your own values, attitudes and beliefs influence the way you mentor. It is fair to say that one of the most difficult aspects of mentoring a beginning teacher effectively lies in the fact that there is often a difference between your expectations and the beginning teacher's expectations. For example, a beginning teacher might have no prior observing and/or teaching experiences, or have previously volunteered as a support worker in your (or another) school for some time and/or have been a full- or part-time staff member in a school (such as a laboratory technician or teacher assistant or as administration staff). Whether or not a beginning teacher has prior experience of teaching and/or working in a school, it is important that each beginning teacher receives individual support and guidance by a mentor as part of their professional development. Therefore, you need to establish with a beginning teacher how they feel about their teaching role, what their perceptions are of a science teacher, what they expect from you, and how they wish to engage with you as one of their main professional supporters.

Research from across several professional settings suggests some converging themes as to what some key actions of an effective mentor are. Table 3.2 lists some key actions of an effective and ineffective mentor. In addition, Task 3.2 asks you to map your mentoring actions against Table 3.2 and revisit Task 3.1 to establish further grounds on becoming an effective mentor, based on a beginning teacher's expectations.

Table 3.2 Some key actions of an effective and ineffective mentor: Adapted from the work of Anderson (2011).

Some actions of an effective mentor	Some actions of an ineffective mentor
Displays an interest in a beginning teacher's learning	Displays a lack of interest in a beginning teacher's learning
Treats a beginning teacher as an individual	Generalises their beginning teacher's needs
Recognises a beginning teacher's stage of learning	Delegates unwanted duties to a beginning teacher
Establishes a learning environment	Noticeably dislikes their mentoring role
Understands a beginning teacher's learning needs and requirement of the initial teacher education	Lacks knowledge of the initial teacher education programme that the beginning teacher is following
Identifies learning goals with the beginning teacher	Discourage the beginning teacher to practice innovative teaching in the classrooms
Includes the beginning teacher as part of the department team	Does not allow the beginning teacher to take part in departmental discussions
Explains what is being done and why	Breaks promises
Demonstrates pedagogy and skills to be modelled	Throws the beginning teacher in at the deep end
Balances practice with educational theory and applies evidence-based practice	Does not see educational theory as important
Assists the beginning teacher to evaluate and reflect upon their learning experience	Lacks experience themselves as a teacher

3. Constructivist approaches to establish effective mentoring

It is fair to suggest that most ITE programmes subscribe to constructivist approaches to teacher education. It is therefore reasonable for a beginning teacher to expect their mentors to adopt an approach to mentoring that aligns to this perspective. The mentoring role within these factors frames the beginning teacher's teaching experience from a constructivist perspective where the mentor scaffolds, facilitates and supports the beginning teacher towards a level of proficiency in science teaching. Hudson's (2004) research in the Australian context confirmed that constructivist mentoring in teacher education can be characterised by a model defined by five factors, where constructivist theory complements effective mentoring within a school placement, as it can be used to build upon prior understandings towards developing a beginning science teacher's knowledge and skills for teaching. Hudson's (2005) effective mentoring factors include:

1. Personal attributes that the mentor needs to exhibit for constructive dialogue;
2. System requirements that focus on curriculum directives and policies;
3. Pedagogical knowledge for articulating effective teaching practices;
4. Modelling, i.e. demonstrating efficient and effective practices;
5. Feedback for the purposes of reflection for improving teaching practices.

Task 3.3 asks you to evaluate case study 3.1 against Hudson's (five) effective mentoring factors.

Task 3.3 Mapping Hudson's factors for effective mentoring

Read case study 3.1 and answer the following questions:

1. Which of Hudson's five factors did Amy find most effective? and why?
2. How do you incorporate Hudson's factors in your mentoring?
3. What will you do to strengthen the incorporation of these factors in your mentoring practices further?

Case study 3.1 Amy's reflections on her experience of school-based mentoring

The key characteristic which I have found most important in all of my mentors is approachability. Having loads of questions and feeling like a bit of a burden with teachers, who you understand have a big workload, can sometimes leave you feeling unwilling to ask questions which might seem "silly". Being reassured that you can approach your mentor at any time with any question, big or small, really made a difference during my time on [school] placement and during the beginning of my probation.

The mentors I had on placement were experienced and were familiar with work I was required to carry out for my [initial teacher education] course, and were supportive in helping organise activities such as shadowing, observations, looking through lesson plans and reflections and genuinely took an interest in giving me constructive feedback to further my practice. They were also familiar with the teacher standards and helped keep my teaching relevant to the key areas I would finally be assessed on. This expertise and understanding of my workload as a student teacher are also a key indicator of a good mentor, from my experience.

Reflecting on your self-perception of mentoring from a beginning teacher's perspective allows you to sketch a picture of an effective mentor to support the development of a beginning teacher you are working with. Tasks 3.1, 3.2 and 3.3 have possibly allowed you to picture an effective mentor. The next section of this chapter presents some suggestions for you to strengthen your efforts in becoming an effective mentor to support a beginning science teacher's development.

4. Supporting a beginning teacher's expectations

Any one beginning teacher differs from other teachers (beginning or experienced) in a number of ways, including their level of resourcefulness, creativity and confidence, as well as their

expectations of you. Hence, as mentioned above, getting to know a beginning teacher's expectations is vital for you to undertake mentoring actions which align their expectations. You begin to know a beginning teacher by first gathering information about their prior teaching and learning experience, to design some questions for later conversations about their expectations of you (some example questions are provided in Section B of Task 3.4). But before asking these questions, allow the beginning teacher to reflect on their expectations of becoming an effective teacher because you might find that some beginning teachers will not be able to clearly communicate what they expect of you as their mentor. The cause of this lack of clarity in communication could be that the beginning teacher has not explicitly self-reflected on their personal teaching and learning developmental needs, and so their understanding of your expectations of them and their expectations of you might not be clear. Task 3.4 asks you to encourage a beginning teacher you are mentoring to reflect on their developmental strengths and needs, and communicate their expectations of you using a Personal Record of Performance (PRoP) form.

Task 3.4 Supporting a beginning teacher to recognise their personal teaching and learning developmental needs and communicate their expectations with you as a mentor using a PRoP form

Complete the three sections of the PRoP form (see Appendix 3.1) by following the steps below:

> **Section A:** Before a mentoring meeting, ask the beginning teacher to complete Section A of the PRoP form independently. Encourage them to record their reflections of their practices and note down three or four areas of perceived 'strength' and three or four 'areas to be developed' over the next week or so. Moreover, based on their self-identified strengths and areas to be development, encourage them to signpost the kind of 'support' they are expecting from you to strengthen their identified strengths and work on the areas for development.

> **Section B:** Next, along with the beginning teacher, complete Section B by discussing Section A of the PRoP form. In this section you and the beginning teacher record specific discussions that chart their prior teaching and learning experiences, and discuss how you can support them. Through this discussion you will elicit a lot of basic and specific support the beginning teacher requires from you. It may be useful to discuss how these experiences have influenced their development so far. You could ask the following questions:

- How the beginning teacher's prior teaching and learning experiences has influenced their development to become an effective teacher?
- What aspects of teaching science makes them feel anxious, more confident?
- What level of guidance do they value to become a confident teacher?
- What teaching and learning support would they expect to engage with?
- What do they expect from a mentor to strengthen their teaching practices in becoming an effective teacher?

Section C: This section on areas of concern is to be completed by you in agreement with the beginning teacher on the level, type and manner of support you can offer to them. For example, the beginning teacher needs to know if there are any aspects of their teaching and learning practices that require immediate action. In accomplishing such actions, you should discuss what support the beginning teacher can expect from you, and what aspects they need to work out on their own. It should be noted that this section may be left blank but that 'areas

of concern' may be a natural part of a beginning teacher's development and may just be a persistent issue that is taking time to resolve. Finally, sign the form and date it.

Using the PRoP form in subsequent mentoring meetings, ideally every week, will be useful for the beginning teacher as it will establish a routine that they can follow. Continued use of the PRoP form could help them to manage their expectations of themselves and to clearly communicate their expectations of you. It can evidence mentor-mentee discussions in a systematic way. These discussions will help you assess their ability to reflect on their progress since the last meeting and to evaluate how they are progressing towards meeting agreed targets that have previously been set for upcoming meetings. Such discussions will also help them to focus on their growing subject knowledge, pedagogical abilities, teaching and learning skills and/or other skills and abilities. Four possible aspects of support, discussed below, that the beginning teacher will be expecting from a mentor, which you can offer to them are:

- Support to understand the school environment
- Suggestions on balancing teaching life with other commitments
- Facilitate a beginning teacher's teaching science
- Support to meet teacher standards.

Support to understand the school environment

Beginning teachers expect mentors to help them understand a number of aspects relating to the general school environment in a practical, quick and easy manner, so that they can adjust to the new environment and begin functioning as quickly as possible (Scott, 2006). Therefore, an induction programme is a vital part of a beginning teacher's orientation into the workings of the school, regardless of their prior experience. In addition, it can give you an opportunity to plan some focused mentoring actions for the beginning teacher you are mentoring, to support their expectations of you in relation to them settling into the school effectively. Your school can subtly vary from other schools in terms of culture, ethos and physical environment - thus the aim of an induction programme is to develop a beginning teacher's ability to function effectively within your school. In other words, it aims to help them "fit in" to the school by making them aware of information, resources, policies and procedures used to govern the work of the school.

It is reasonable to suggest that any new member of the staff (beginning or experienced teacher) ought to receive some practical information to help them function within the new environment soon after their arrival at the school. Table 3.3 can be used as a checklist to induct a beginning teacher to the school. Many schools have a tailored induction programme for beginning teachers, which should provide an elementary understanding of the mechanics of how the school works to support their professional development. Therefore you can adopt/adapt the first two columns of Table 3.2 according to your school's procedures on inducting a beginning teacher, and then use this table to record: date (column 3) of when you have conducted (or will be conducting) the actions in the second column, the beginning teacher's queries and expected further support (column 4), and your suggestions and agreed support in response to the beginning teacher's expectations (column 5).

Table 3.3 An induction programme checklist for a beginning teacher.

Checklist items	Mentor's actions	Date	Beginning teacher's queries and additional requirements	Mentor's additional support
School and senior leadership team	Welcome a beginning teacher to the school. Provide verbal introductions to the school's culture, ethos, key principles, and names and roles of the senior leadership team			
School handbook	Give a copy of the school's handbook, including details about the school, such as information about the schools: • contact details • ethos • the school day • school staff • the curriculum • assessment • school policies.			
A beginning teacher's	Provide an overview of some of the whole school expectations/requirements to be			

activities within the whole school	undertaken by a beginning teacher, such as: The schools safeguarding protocol Professional expectations School Health and Safety procedures Overview of the school's behaviour policies Inclusion policies and procedures Tracking and monitoring policies Pupil support arrangements.			
A beginning teacher's activities within the science department	Provide an overview of the expected activities from a beginning teacher that are practiced in the Science Department Observing experienced science teachers Observing experienced teachers from other practical subjects like design and technology, home economics or physical education Discussions with science technicians Practise of experiments and other practical activities An overview of departmental assessment practices (summative and formative)			

	Tracking and monitoring pupils progress			
	Shadowing pupils (see Chapter 19, Tasks 19.5 and 19.6, ppxx-xx).			

Once the beginning teacher has been introduced to key people within the school and department, they then need to become acquainted with the expectations of the school and department. Therefore, while completing the last two columns of Table 3.3 with the beginning teacher, it is important that your discussions involve framing of the school context within which they are expected to make progress in their teaching and learning practices.

You need to be mindful that many beginning teachers display some level of anxiety during the first few weekly mentoring meetings and so you might not be able to gather all the required information about their initial expectations in these meetings. Therefore, it is important that you establish a mentor-mentee relationship during the first few meetings, by putting the beginning teacher at their ease, by providing them with emotional support, along with professional guidance. Refer to Chapter 5, for guidance on establishing a mentor-mentee relationship based on emotional support during initial mentoring meetings (Table 5.1). During this initial stage, you should also indicate to the beginning teacher that they will be expected to take increasing responsibility for the learning of their pupils and thereafter become less dependent upon support from you and other members of staff as they gain more experience.

Suggestions on balancing teaching life with other commitments

In addition to differences in their prior experiences and expectations, a beginning teacher might be seeking your support in balancing their professional and personal lives. You need to be mindful that a beginning teacher you mentor might be doing a weekend job to meet financial needs, have childcare responsibilities et cetera. Therefore, as a mentor it is useful to know early about a beginning teacher's other commitments and responsibilities that they would like to share with you, for example, you could ask:

- What aspects of their commitments other than teaching do they see as helping or hindering their professional development?
- How you can support them?

- Do they use any strategy to keep their professional and personal life in balance? (such as creating and adhering to a work schedule, socialising with people outside the work environment et cetera).

You should be resourceful in giving a beginning teacher some guidance that can support them to manage their teaching commitments along with other responsibilities. This may include guidance on available funding for teachers and science graduates, student loans, childcare facilities, access to health and well-being organisations et cetera. You can also share some of the day-to-day strategies that help you balance your teaching life with some other commitments (see above).

Facilitate a beginning teacher's teaching science

It is noted that a beginning teacher expects you to support them with their lack of prior teaching experiences. This requires you to understand and acknowledge the beginning teacher's expectations of you in relation to, for example, co-planning, co-teaching, observing experienced teachers, being observed by experienced teachers and evaluating their teaching practices.

A variety of strategies to support a beginning teacher to gain science teaching experience through your guidance are presented in other chapters in this book, including: Chapter 6 associated with planning, Chapter 7 on teaching (ppxx), Chapter 8 on observation, and the use of PRoP in this chapter on evaluating teaching practices. These chapters and/or sections of the chapters consider some mentoring strategies to cater for differentiated support on an ongoing basis.

At this point, you need to acknowledge a beginning teacher's previous teaching experiences as a student teacher. For example, they may have had a good first school placement but may struggle with the second school placement due to a change of school in terms of setting and organisation. It is therefore important for you to determine how the beginning teacher's learning expectations are influenced by their earlier learning gains/setbacks through planning and teaching experiences, observing other teachers and/or being observed by the experienced teachers.

Support to meet teacher standards

A major expectation of a beginning teacher is for you to support them to meet the requirements of the teacher standards towards which they are working. Table 3.4 presents a beginning teacher's progression profile, which can be adopted and adapted to support them to develop their progression profile by mapping against the professional teacher standards used in your context. This profile acts as a progression profile as it requires the beginning teacher to identify further actions that they will undertake to support areas for development they have identified in the profile. It is ideal if you can encourage a beginning teacher to start building this progression profile before attaining newly qualified teacher (NQT) status, and to continue after they have achieved it. You can guide them to reflect, review, and modify Table 3.4 by extending the third and fourth column and review it, ideally every six months, and at least for the first three years of their teaching career.

Table 3.4 A beginning teacher's progression profile.

Professional teacher standards progression profile entry, for example:	Some indicators (adopted from General Teaching Council for Scotland (GTCS), 2012)	Beginning teacher's evidence	Beginning teacher's expectations of their mentor in achieving teacher standards
Professional values and commitment	Mutual respect and rapport Honesty and integrity Collaboration Rights of all learners Wider school community		
Professional knowledge and understanding	Curriculum knowledge Pedagogical theories into practice		
Professional skills and abilities	Teaching and learning		

	Classroom organisation and management		
	Assessment/ pupils learning.		

Moreover, in supporting a beginning teacher's expectation of attaining qualified teacher status (QTS), you need to be aware of the current guidelines on mentoring used in your country. These guidelines provide a structured approach to mentoring beginning teachers and mentoring models for you to adopt. Such frameworks have evolved and developed over time and have tended to focus on either the apprenticeship, competence or reflective models (see description of these models in Chapter 1). Currently, for example, the 'self-evaluation framework' for initial teacher education in Scotland (Education Scotland, 2018), tends to merge the three models of mentoring given that all initial teacher education is university-based, validated by the GTCS and by definition is standards driven, with a heavy emphasis on the practicum component where mentoring is often shared between a university-based tutor and a school-based mentor.

The mentoring model you are using in your country/school might not be shared with university-based tutors, hence a beginning teacher will rely more on you, and so you have a greater responsibility to support their expectations to migrate from apprenticeship, guided and participatory planes of development over time. Along these lines, this chapter and other chapters in the book are designed to support you to develop the best possible mentoring practices, even if you have minimal support from the other external bodies, to assist the gradual development of current and upcoming beginning teachers.

5. Unreasonable expectations by a beginning teacher of a mentor

The chapter has, so far, presented what a beginning teacher could be expecting from you and how you can support them during the time you are mentoring them. The PRoP form highlights the beginning teacher's expectations of a mentor. While completing the PRoP form, a beginning teacher should be aware that a mentor may not always be able to support what they expect from them, for example, if they expect written feedback on each and every lesson. Therefore, while completing the PRoP form, it is recommended that you discuss with the

beginning teacher what you can or cannot do. In addition, Task 3.5 asks you and the beginning teacher to discuss some unreasonable expectations they might have of a mentor.

Task 3.5 Unreasonable expectations of a mentor

- Complete the second column of Table 3.5, which asks you to list what a beginning teacher might expect of you, but which it is not possible for you to act upon it. Some examples are provided in the table
- Ask the beginning teacher to complete the second column of Table 3.5 separately
- Next, discuss each other's thoughts and complete the last two columns of the table together by highlighting the responsibilities of the beginning teacher and mentor to accomplish the aspects of expected support below, i.e.:
- To understand the school environment
- To balance teaching life with other commitments
- Facilitate a beginning teacher's teaching science
- To meet teacher standards

With the beginning teacher, add other aspects of support in the table, as appropriate. Moreover, during these discussions highlight that a beginning teacher's expectations and your support will evolve over time.

Consider Table 5.4 'Managing expectations and commitments' (ppxx) before conducting a discussion with the beginning teacher about some reasonable and unreasonable expectations of a mentor.

Table 3.5 Some aspects of expected support by a mentor associated with some unreasonable expectations.

Some aspects of expected support	Some unreasonable expectations from a beginning teacher	A beginning teacher's responsibilities	A mentor's responsibilities
Understand the school environment	Expecting the mentor to go through the school's handbook with the beginning teacher.	To read the handbook thoroughly. Could ask the mentor about specific points from the handbook for clarity.	To provide school handbook, highlighting aspects of school's ethos, value and culture.
Balance teaching life with other commitments	Expecting the mentor to organise a timetable for them to use to balance teaching life with other commitments	To construct and modify a timetable themselves.	Provide some model strategies to balance their teaching life with other commitments.

Facilitate a beginning teacher's teaching practices	Expecting written feedback on each and every lesson.	Self-evaluate lessons.	Provide some written and some oral feedback.
Meet teacher standards.	Expecting mentor to revise and recap the subject knowledge.	Revise and recap subject knowledge independently.	Point a beginning teacher to some books and other resources, including online resources, to develop their subject knowledge.

Summary and key points

In order to effectively mentor a beginning science teacher, I suggest that it is the responsibility of a mentor to acknowledge the expectations that the beginning teacher may have of them as a mentor. Key points from the chapter are:

- Reflecting, understanding and considering characteristics of an effective mentor from the beginning teachers' perspectives
- Adopting constructivist approaches to mentoring that acknowledge the beginning teacher's perspectives
- Facilitating support to the beginning teacher to communicate their expectations of a mentor effectively
- Plan and undertake mentoring steps to support the beginning teacher's expectations by providing an induction programme and opportunities to discuss, for example, balancing home and work life, offering guided support on planning, teaching, observing, evaluations, and providing support to meet the teacher standards.

Further resources

Luft, J.A. (2009) 'Beginning secondary science teachers in different induction programmes: The first year of teaching', *International Journal of Science Education,* 31 (17), pp. 2355-2384.

This article provides a useful insight into how different types of induction programme facilitate the development of beginning secondary science teacher's development over the course of a

session. This article shows that teachers who participated in science-specific induction programmes significantly changed their beliefs and used more investigations in their classroom lessons than did their peers in other induction programmes. This indicates that science specific mentoring has a significant positive effect on the beginning science teachers' professional identity and classroom practice.

National Academies of Sciences, Engineering, and Medicine (2019) *The Science of Effective Mentorship in STEMM*, Washington, DC: The National Academies Press, viewed 20 January 2020, from: https://doi.org/10.17226/25568.

This report outlines findings from a North American consensus study report. The report provides a rich picture of why mentoring is needed, what mentoring is, why professional identities matter, what form mentoring takes, how effective mentorship can be achieved and why assessment and evaluation is required. While this focuses on STEMM in general rather than science education in particular, this report provides the reader with a simple, easy to read starter.

Watson, S.B. (2006) 'Novice science teachers: Expectations and experiences', *Journal of Science Teacher Education*, 17 (3), pp. 279-290.

This text explores a project that aimed to investigate how novice science teachers perceived a lack of preparation to deal with common problems in the classroom could be addressed. It outlines several trends that emerged such as recognising the importance of effective, organized instruction during the term of the study, along with the importance of effective classroom management and discipline skills. The study emphasises that a focus on supporting developing novice science teachers' ability to plan and prepare lessons, and develop adequate knowledge of subject matter is important. Importantly, all novice science teachers in this study felt that they were well prepared by their university classes in their primary content area, but less prepared in supporting areas of science. That said, this article is useful for mentors since it indicates where potential gap may be in novice science teachers developing teaching practice.

Appendix 3.1 Personal Record of Progress (PRoP) Form.

Personal Record of Progress (PRoP)   **Week:**   Please discuss this with your mentor.
Section A   **Area(s) of perceived strength:**   **Expected support from the mentor:**
Area(s) to be developed: **Expected support from the mentor:**   **Spoken and Written Communication: Satisfactory / Improving / Needs Attention**
Section B   **Specific discussion**   Main area of strength this week (or strengths identified previously):   Main area for development next week (or areas for development before the next meeting):
Section C   **Area(s) of concern at this stage** No   Yes ☐   ☐   If yes: • What steps a mentor would undertake to support the beginning teacher?

•   What steps a beginning teacher would undertake to support their development?
Beginning Science teacher's signature……………………Date ……………….   Mentor's signature …………………………………………Date ………………..