The significance of specialist teachers of learners with visual impairments as agents of change

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The significance of specialist teachers of learners with visual impairments as agents of change: Examining personnel preparation in the United Kingdom through a bioecological systems theory

Key words: specialist teachers, personnel preparation, bioecological systems model

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Abstract

Introduction: The unique challenges to learning and participation in education associated with visual impairment are well documented in the literature, as is the importance of addressing these challenges through ensuring practitioners who support them are equipped with appropriate knowledge, understanding and skills. We use a bioecological systems theory as a lens through which to examine the personnel preparation of vision specialist teachers to act as agents of change. We draw on the different teacher preparation programmes to become a specialist teacher of learners with visual impairment in the United Kingdom (UK) to demonstratrate how this theory can be applied.

Methods: We use a bounded case study to bring together the respective teacher preparation programmes in the United Kingdom in order to demonstrate complementary characteristics of the theoretical model proposed.

Results and Discussion: We argue that a bioecological systems theory offers a holistic framework for educators involved in personnel preparation to explicitly engage with vision specialist teachers in their role as potential agents of change. This preparation includes developing distinctive knowledge, understanding and skills to facilitate learner participation in education through promoting 'progressive' and 'mutual' accommodation between the active learner and the changing learning environments in order to achieve successful outcomes.

Implications for practitioners: The article is original in applying a bioecological systems theory to the preparation of specialist teachers of learners with visual impairments with a focus on their role as agents of change. We argue that it has significance therefore for practitioners and researchers concerned with the personnel preparation of other practitioners of learners with distinctive educational needs across national contexts and settings.

Introduction

The unique challenges to learning and participation in education associated with visual impairment are well documented in the literature, as is the importance of addressing these challenges through ensuring teachers are equipped with specialist knowledge, understanding and skills (e.g. Hazekamp and Huebner, 1989; Mason and McCall, 1997; Ravenscroft, 2015, Douglas and McLinden, 2014; McLinden et al. 2016). Educational support is provided by a range of practitioners and in many national contexts includes input from specialist teachers of learners with visual impairments (e.g. Silberman and Sacks, 2007; McLinden and McCracken, 2016, Ravenscroft, 2013). We define specialist teachers as those teachers that have a specific qualification which is over and above the teacher's initial teaching qualification in order to develop and deliver specialised learning programs for learners with visual impairment. Within the United Kingdom (UK) these specialist teachers are referred to as qualified teachers of visual impairment (QTVI). In order to become a QTVI in the UK the teacher must first hold an initial teaching qualification (either primary or secondary) and normally have been teaching in the classroom for two years. In addition the teacher must obtain a further Post Graduate Diploma from a Government recognised university.

Given the changing and complex educational landscape in which specialist teachers support such learners in different contexts, we build on recent work in this area to illustrate how a bioecological systems theory (e.g. Bronfenbrenner, 2005) can be drawn upon to inform personnel preparation across national contexts and settings in order to ensure that these specialist teachers are able to act as significant 'agents of change'. By adapting such a theoretical approach to personnel preparation, teachers can learn to understand their role as political, cultural, intellectual and moral 'agents', and therefore can use this understanding to inform their classroom and itinerant practice as well as their relationships with learners and the communities they work, in which hitherto may not have been a significant component of specialist teacher preparation programmes. We define the distinctive role of the vision specialist teacher in acting as an 'agent of change' as including:

- *contributing* to establishing individual learner needs and strengths;
- *mediat*ingbetween the developing and active learner with visual impairment and the changing proximal (close) environments;
- *facilitating* interactions between environments and connections with distal (distance) influences;

- *shaping* distal influences such as curriculum policies, budget allocations and staffing levels;
- *engageing*with, and be guided by, national and international policy and rights drivers and agendas;
- *promoting* progressive and mutual accommodation between the active learner and the changing learning environments in order to develop and promote independence.

Re-examining how specialist teachers of learners with visual impairments are prepared for this role in a given national context is particularly relevant at a time when their professional roles are undergoing considerable change (e.g. McLinden et al. 2016; McCracken and McLinden, 2016). As an example, new national legislation and policy in England and Scotland e.g. SEND Code of Practice in England, (DfE, 2015), Education (Scotland) Act (2016), strengthens the responsibilities of mainstream and special schools for teaching and assessing the progress of *all* learners with particular educational needs who are placed with them. Our focus in this paper therefore is to offer a holistic conceptualization of the knowledge, understanding and skills the specialist teacher requires to act as a proactive 'agent of change' in order to facilitate a learner's participation and development within a complex and evolving 'ecology' of inclusive education (e.g. Anderson et al., 2014).

We start the paper with an overview of Bronfenbrenner's bioecological systems theory of development and discuss how it has been drawn upon to examine the distinctive role of specialist teachers in supporting learners with sensory impairments (e.g. Swanwick, 2014; McLinden et al. 2016; McLinden and McCracken, 2016). We then apply the theory to the United Kingdom (UK) as a bounded case study in order to examine the personnel preparation of vision specialist teachers, drawing on two national specifications (England and Scotland) to illustrate relevant knowledge, understanding and skills. Our original contribution to the literature is to propose a new conceptual model that draws on a bioecological systems theory to illustrate the distinctive knowledge, understanding and skills specialist teachers of learners with visual impairments require through personnel preparation in order to act as effective 'agents of change', working 'within' and 'between' the respective systems of a given educational ecology.

Overview of the bioecological systems theory

The bioecological systems theory was developed by Uri Bronfenbrenner over several decades to demonstrate the complex and sophisticated relationships between influences on human development that are close to the learner (i.e. proximal influences) and those that are distant (i.e. distal influences) over a given developmental timespan (e.g. Bronfenbrenner, 1977; 2005). As Lerner (2005, pxviii) notes Bronfenbrenner's model includes several propositions described as "sets of ideas' to promote a 'dynamic, person-context relational view of the process of human development." The first proposition was described by Bronfenbrenner as being the "cornerstone" of a broader bioecological systems theory (e.g. Bronfenbrenner, 2005) and makes reference to "the progressive, mutual accommodation, *throughout the life course*, between an active, growing human being and the changing properties of the immediate settings in which the developing person lives, as this process is affected by the relations between these settings, and by the larger contexts in which the settings are embedded" Bronfenbrenner, 2005, p107 (original italics). The synthesis between the active individual and the changing context was conceptualized by Bronfenbrenner as a series of nested systems to reflect their dynamic relationships within a given ecology. The context within which individual development takes place within this structure is commonly represented in the literature as a series of concentric circles situated around a developing individual with each circle referring to nested but separate 'systems' to reflect this ecology (e.g. Anderson et al, 2014; McLinden et al. 2016; Hewett et al. 2017).

The individual at the centre of the ecology can be described in relation to particular characteristics (e.g. age, gender, cultural background etc.), and was conceptualised by Bronfenbrenner (2005, p121) as "an active agent" who contributes to his or her own development. Surrounding the individual is the *microsystem* which incorporates "the complex of relations between the developing person and the environment in an immediate setting containing the person." (Bronfenbrenner, 1977, p. 515) For children and young people this system includes their active interactions with people close to them in their environment including, depending on their age, people in their home, playgroup, school, college and wider community settings.

The *mesosystem* surrounds the microsystem and consists of "the interrelations amongst major settings containing the developing person at a particular point in his or her life." (Bronfenbrenner 1977, p. 515) As noted by McLinden and MaCracken (2016), it is concerned

with developing and promoting connections between structures *within* the child's microsystem as well as making connections with other agencies in the outer systems. The *exosystem* is situated around the mesosystem and is described as encompassing "the linkage and processes taking place between two or more settings, at least one of which does not ordinarily contain the developing person, but in which events occur that influence processes within the immediate setting that does contain that person" (Bronfenbrenner, 2005, p. 148). As such it is considered to be a 'distal' system that influences an individual indirectly through its potential impact on the micro- and meso-systems.

The outer system is referred to as the *macrosystem* and was conceptualized by Bronfenbrenner as comprising "the overarching pattern of micro-, meso-, and exosystems characteristic of a given culture, subculture, or other broader social context." (Bronfenbrenner, 2005, p. 149-150) The relevance of this system is captured succinctly by Swanwick (2014, n.p.) in noting that it "develops the characteristics of the environment further to include factors which are more remote from the individual but which provide the infrastructure for the microsystem such as cultural constructs of education, culture or community." The *chronosystem* acknowledges the progressive nature of development over time, such that as children and adults get older or more experienced they may interact differently with the systems around them.

Whilst the theoretical framework outlined by Bronfenbrenner was not initally intended to be directly applied to children with disabilird there is evidence in the literature to demonstrate the value of drawing on it to examine educational practice for learners with particular developmental needs (e.g. Bricout et al., 2004, Davis, Ravenscroft & Bizas, 2014). More recently the framework has been applied to the support of learners with sensory impairment (e.g. Swanwick, 2014; McLinden et al, 2016; Hewett et al. 2017). As examples, it has been drawn upon to examine the distinctive role of specialist teachers in facilitating curriculum access within education (McLinden et al., 2016), as well as to analyse multi-layered influences on the participation of learners with visual impairments in higher education (Hewett et al. 2017). The framework has also provided a lens through which to provide a holistic overview of the role of visiting teachers of learners with sensory impairments in a national context, with a particular focus on the nature of the 'educational supports' provided to schools (McLinden and McCracken, 2016).

With respect to the personnel preparation of specialist teachers of learners with other types of sensory impairments, Swanwick (2014, n.p.) has applied a bioecological model to the education of teachers of the deaf (ToD). The model suggests that specialist teachers need to be supported in order to "develop the confidence and competencies to work effectively across these levels through training and professional development programmes and, beyond training, through the establishment of research practice partnerships which foster a critical engagement with the learning and teaching process" (Swanwick, 2014, n.p.). In the next section, we apply a similar analysis of the bioecological theory to examine the personnel preparation of specialist teachers of learners with visual impairments, with a particular focus on the UK context. We draw on a bounded case study (e.g. Hamilton & Ravenscroft, 2017) approach bringing together the programmes in England and Scotland as a meaningful choice to demonstrate that although there exist differing characteristics within both programmes they demonstrate complementary characteristics of the theoretical model proposed.

Personnel Preparation of specialist vision teachers in the United Kingdom

Population, Policy and Provision

The four countries within the UK are England, Northern Ireland, Scotland and Wales. The education contexts have become increasingly divergent since education has been devolved to each country, and although some policies differ, common issues have been identified as including (RNIB, 2017):

- Integrating planning and commissioning of services to bring together education, health and social care provision;
- Improving transitions through planning for children and young people from birth through to adulthood;
- Promoting greater choice and control for children and young people and their families.

Table 1 provides a breakdown of the numbers of children and young people with visual impairments known to the schools and specialist services in each country, and the approximate number of specialist teachers with a qualification to teach these learners. The population data is drawn from a single dataset (RNIB, 2017), and given variations in how

such data is collected and reported in relation to for example, age, primary needs etc. there can be considerable variations in the numbers in comparison with other national datasets.

Insert Table 1

The situation with respect to the personnel preparation of specialist teachers of learners with visual impairments in the UK is complex with specific requirements applying to each country. Whilst a number of national specifications have been developed outlining the particular knowledge, understanding and/or skills that these teachers are expected to be able to demonstrate in a given national context, only those in England and Scotland operate at the time of writing. As there are currently no specialist qualifications for teachers in Wales and Northern Ireland therefore, eligible teachers will normally be expected to undertake a professional qualification at a course provider in either England or Scotland. As we discuss below, there are differences in teacher eligibility as well as in the course provider specifications that are drawn upon within each country.

Personnel preparation of specialist teachers in England

The Mandatory Qualification (MQ) is a well-established route for specialist teachers seeking a professional qualification in England with a requirement that "Those teaching classes of children with sensory impairment must hold an appropriate qualification approved by the Secretary of State. Teachers working in an advisory role to support such pupils should also hold the appropriate qualification." (DfE, 2015, para 6.61) The MQ is part of the statutory requirements for qualified teacher status set out in the regulations governing qualified teacher status in England (NCTL, 2015). In order to gain the MQ award, the Department for Education (DfE) requires that "participants are assessed against, and demonstrate that they meet, the required course outcomes" (NCTL, 2015). Qualified teachers who work in advisory roles, as well as those supporting children and young people who have visual impairments in other educational settings, are advised to complete MQ training although it is not a requirement (DfE, 2015) A summary of the headings used in the current MQ specification for England (NCTL, 2015) is presented in Figure 1. Each of the headings is divided into sub-

headings listing specific MQ 'outcomes' that present the particular knowledge and understanding and skills that need to be demonstrated.

Insert Figure 1

Personnel preparation of specialist teachers in Scotland

The Requirements for Teachers (Scotland) Regulations (2005) requires each authority "to employ adequate numbers of teachers with appropriate professional skills and knowledge necessary to enable those teachers to undertake the teaching duties allocated to them". Teachers who teach wholly or mainly children with vision impairment are required to possess an appropriate qualification to teach such pupils (Ravenscroft and Wazny, 2017). Teachers may be employed by a local authority without having the appropriate additional qualifications so long as the education authority is satisfied that the teacher is already in process of training and will obtain these qualifications within five years of teaching pupils with vision impairment. In comparison to England, there are a range of routes by which a teacher in Scotland can acquire the competences. A major route is through acquisition of degrees or attendance at courses at higher educational institutions, although qualification can also be obtained through a combination of courses, and through other forms of accredited training (as long as that training has been quality-assured). A summary of the headings used in the specification for Scotland is presented in Figure 2.

Insert Figure 2

Personnel preparation of specialist vision teachers through a bioecological systems model

Through the lens of a bioecological systems model a learner with visual impairment is considered to be an 'active agent', situated at the centre of a complex and multi-layered ecology that is governed by a range of proximal and distal influences. As we examine below, in order to act as 'agents of change' in a given context, personnel preparation of specialist

teachers will seek to ensure that the teachers can work confidently and effectively 'within' and 'between' the respective systems to achieve successful outcomes.

With respect to the learner at the centre of the ecology, the specialist teacher will need to know how to contribute to establishing individual needs and strengths, and help to match these to suitable learning and teaching approaches that promote access to learning and participation (e.g. NCTL, 2015). Preparing specialist teachers to contribute to establishing these needs includes ensuring they have appropriate knowledge and understanding of the anatomy and physiology of the eye and related structures, the range of conditions that can create vision impairments and the potential implications of these conditions for development, learning and participation (e.g. Mason and McCall, 1997; NCTL, 2015). Preparation will also include developing skills in undertaking functional visual assessments, as well as in knowing how to promote a learner's physical, cognitive and social development to ensure effective participation in education (e.g. NCTL, 2015). Examples of relevant knowledge, understanding and/or skills from the different UK national specifications within the differing bioecological systems are presented in table 2.

Insert table 2

The *microsystem* contains the environments in which the learner actively develops through engaging in formal and informal learning activities and includes the social aspects of his or her life (e.g. McLinden and McCracken, 2016). As an 'agent of change' in this system, the specialist teacher has a significant role in mediating interactions between the learner and the learning environments. Personnel preparation will therefore include a focus on ensuring specialist teachers know and understand how to support learners to access the curriculum whilst also promoting independent learning through developing additional skills including braille, technology and mobility (e.g. McLinden et al. 2016; NCTL, 2015). Practical examples include advising on classroom layout, student seating positioning and physical education partitipation (table 2.

The *mesosystem* includes the relationships that are developed and nurtured between a given home, school, community, work place setting. As an 'agent of change' in this system, the specialist teacher will seek to develop and promote connections between structures within the

child's microsystems and make links with distal influences in the outer systems. Personnel preparation will therefore include a focus on ensuring specialist teachers have appropriate knowledge, understanding and skills to faciliate interactions between environments, and connect with distal influecnes. This includes developing and promoting support networks within school and college, making links between parents and relevant services, supporting the child and his/her teachers in the respective educational environment, establishing connections with other agencies (e.g. social services, habilitation) and drawing on relevant policy and legislation (e.g. Mason and McCall, 1997; NCTL, 2015). Practical examples include home visits from the specialist teacher to support parents and learners and explaining and introducing the roles of other professionals involved in the support network (table 2).

The *exosystem* is conceptualized as being outside of the learner's direct agency and includes distal influences on the child such as the curriculum policies of the educational setting, budget allocations in a given year to support children and young people with particular types of needs. As an 'agent of change' in this system, the specialist teacher will help to shape distal influences in order to faciliate learner engagement and participation in education. Personnel preparation will therefore include a focus on ensuring specialist teachers have appropriate knowledge, understanding and skills to shape the distal influences in this system, including for example, how to advocate for funding, contribute to inclusive curriculum policies, participate in relevant professional development activities (e.g. Mason and McCall, 1997; NCTL, 2015) and to understand how to use assessment tools to shape these influences. ractical examples include access arangements for public exams and school wide visual impairment awarness raising (table 2).

The *macrosystem* incorporates the key drivers for change in inclusive education at national and international levels and includes for example, the prominence given to inclusion as part of an international broader human rights agenda as well as national legislative and educational frameworks. Personnel preparation will therefore include a focus on ensuring specialist teachers know and understand how to engage with, and navigate, these distal influences including for example, national legislation, evidence based practice, specialist teacher education requirements, statutory assessment processes, as well as policy (nationally and internationally) that relates to children and young people with special educational needs. Practical examples include supporting and advising schools of their statutary responsiblities drawing on relevant legislation (table 2).

The *chronosystem* emphasises the significant role of the specialist teacher in seeking to promote 'progressive' and 'mutual' accommodation between the active learner and the changing learning environments to develop independence over a given time period (e.g. McLinden et al. 2016; Hewett et al. 2017). Teachers will need to understand therefore how to ensure that the individual child's environment is structured to promote learning and participation, as well as the extent to which additional input may be required to support the development of particular skills in order to promote independent learning over a given timeframe. This can be illustrated through the teacher knowing how to balance access to the core curriculum, with ensuring appropriate opportunities are provided to develop skills through an additional or expanded core curriculum (ECC) (e.g. McLinden et al. 2016). Practical examples include introducing new technologies to encourage the gradual reduction of direct adult support in lessons (table 2).

Discussion

In considering the personnel preparation of specialist teachers of learners with visual impairments through the lens of a bioecological systems theory, a narrative emerges that suggests a role distinction between individual teacher *agency* and teachers acting as *agents* of change (e.g. Pantic and Florian, 2015), working in distinctive ways within and between' the respective systems in a complex ecology in order to promote a learner's participation in education (e.g. McLinden and MaCracken, 2016). We elaborate on this narrative further in the discussion and propose a new conceptual model that draws on the bioecological systems theory to guide future developments in this area.

In discussing Bronfenbrenner's theory of human development, Lerner (2005) notes that his vision included "optimization – the enhancement of the life course – and the production, through the person's relations within the developmental system, of positive and healthy development. His ideas focused the field on what was, and what could be, the best of being human." (pxiii) We have argued in this paper that appropriate personnel preparation is fundamental in equipping specialist teachers of learners with visual impairments with appropriate knowledge, understanding and skills to enhance the individual life course of these learners in order to optimise development in line with such a vision. In particular, we have emphasised the significance of the specialist teacher acting as a proactive 'agent of change' in

seeking to promote progressive, mutual accommodation between the *active* learner and the changing environment over a period of time with view to developing independence.

Such a perspective is particularly relevant as it highlights a need to develop a proactive and engaged practitioner who can work effectively 'within' and 'between' each of the systems in the bioecological systems model to achieve successive learner outcomes. This perspective is supported in recent work on inclusive pedagogy by Pantic (2015) and Pantić & Florian (2015) in outlining a model for teacher agency and social justice in which they note that the preparation of teachers to act as 'agents of change' for inclusion and social justice requires expanded competences that include shared responsibility for the development of schools and systems. Such agency it is argued, implies a "shift from thinking about teaching as 'implementing' policies designed by others to a focus on systematic conditions which shape practices, and understand what other actors can bring to bear on developing more inclusive educational systems and practices." (Pantic and Florian, 2015, p347)

Of significance is the distinction Pantic and Florian (2015) make between individual teacher agency and the notion of "agency for change", with the latter requiring an articulation of the nature of change required so as to support teacher education designers in specifying appropriate purposes and relevant preparation. Similarly, in their analysis of the relationship between agency and learning, Biesta and Tedder (2007, p146) present an approach to understanding agency which does not view agency as an individual power but rather as "a quality of the engagement of actors with temporal-relational contexts-for-action." They argue that understanding the achievement of agency requires an understanding of the "ecological conditions" under, and through which, agency can be achieved, noting that agency is not concerned just with the ways in which we engage with our "contexts-for-action", but rather has to do with a "capacity to shape our responsiveness to the situations we encounter in our lives." (Biesta and Tedder, 2007, p146) The specialists teacher's responsiveness to shape proximal and distal influences will also require appropriate opportunities for critical reflection so that as Biesta and Tedder, 2007, p 146) argue, they are able "distance themselves from their immediate actions in order to explore and evaluate them".

Drawing on a bioecological theory, we propose a new conceptual model in Figure 3 that draws on relevant literature (e.g. Bronfenbrenner, 2005; McLinden et al. 2016; Hewett et al. 2017; Swanwick, 2014) to articulate how such agency can be conceptualised with respect to

the personnel preparation of specialist teachers of learners with visual impairments in a given educational ecology.

Insert Figure 3

Limitations

One of the limitations often given to the bioecological model is that is does not necessarily explain why things happen or give guidance about how to act to bring about change. However, by highlighting how specialist teacher preparation programmes can be adapted through such a lens we believe that we have overcome this limitation as programmes can be designed around this model to ensure specialist teachers can act as 'agents of change'. Another potential limitation is that the model may not be effective where the learner does not accept the specialist teacher's involvement. This might come about when, for example, the learner may be too overwhelmed by the issues they face. A potential practical challenge is that initially a specialist teacher education preparation programme may not fit with the theoretical approach detailed and therefore a period of change and adjustment may be needed to adapt programmes.

Conclusion

A shift towards greater inclusive legislation, policy and practice in recent years within the UK, has resulted in changes in curriculum design, delivery and support for learners with visual impairments, including increasing placement in settings not specifically designated for these learners. Such changes require different knowledge, understanding and skills, and therefore have implications for personnel preparation in order to support the learner to achieve successful outcomes. We have argued in this paper that a bioecological systems theory provides a holistic lens through which to examine the multi-layered influences on the development and participation of learners with visual impairments and the 'agent of change' role of specialist vision teachers in facilitating successful outcomes. We have also emphasised that such a focus requires acknowledgement of an *active* learner with distinctive needs developing in changing environments, supported by proactive and reflective specialist teachers, that work collaboratively to promote progressive and mutual accommodation in order to achieve such outcomes. An analysis of professional roles through a bioecological systems lens affords exciting possibilities for educators involved in personnel preparation to

explicitly engage with practitioners as potential 'agents of change' within, and between, the respective systems, to ensure that a learner's developmental pathway can be enhanced in accordance with the social, cultural and political contexts within a given inclusive educational ecology.

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Table 1. Number of children with vision impairments aged 0-16 years of age in the United Kingdom and approximate number of specialist teachers of learners with vision impairements.

Table 2: Examples of distinctive knowledge, understanding and or skills of relevance to the role of the specialist teacher within the different bioecological systems.

Figure 1. Summary of headings in the Mandatory Qualification specification for teachers of children and young people with vision impairments in England.

Figure 2. Summary of specific competences for teachers of learners with visual impairment in Scotland.

Figure 3. A bioecological model to illustrate the personnel preparation of specialist teachers of learners with visual impairment to act as potential 'agents of change' within the respective systems.

Table 1

Number of children with vision impairments aged 0-16 years of age in the United Kingdom and approximate number of specialist teachers of learners with vision impairments (from RNIB Sight Loss Data Tool, 2015; Keil, 2015; Ravenscroft and Wazny 2017).

	England	**N. Ireland**	**Scotland**	**Wales**	**Total**
Number of children with vision impairments (0-16)	21,715	815	1,947	1,187	25,663
Approximate number of specialist teachers of learners with vision impairments	600	10	95	30	735

Bioecological System	Focus of specialist vision teacher personal preparation	Example of a matching practical MQ outcome (England)	Example of a matching practical competence outcome (Scotland)	Practical example
Microsystem The environments in which the learner actively engages in both formal and informal learning including all social aspects.	Knowledge, understanding and skills to facilitate interactions between the learner and the learning environment to ensure effective participation.	To create safe learning environments that encourage independence and mobility, help to develop social interaction and support the emotional health and wellbeing of learners with VI. *(Teaching and Learning)*	An ability to identify, design, adapt and evaluate appropriate materials and environmental conditions to meet the needs of the full range of children and young people with VI. *(Teaching and Learning)*	Specialist teacher advises mainstream schools on classroom layout and seating position that encourages learner with visual impairment to access learning independently and reduces reliance on adults.
Mesosystem Relationships that are developed and nurtured between home, school, community and work.	Knowledge, understanding and skills to develop and promote structures within the learners' microsystem and to make links with the distal influences in the outer systems.	Liaise effectively and work with partnership with parents/carers of learners with VI, providing information, advice, support based on the principles of informed choice and the needs of the child. *(Partnership working)*	An ability to plan, develop and evaluate their strategies for working with parents/carers, teachers and multidisciplinary teams in support of learners with VI. *(Teaching and Learning)*	Specialist teacher visits young blind child at home and supports parents in managing and promoting learning, encouraging them to exercise choice and control of learning strategies.
Exosystem This is outside the learner's direct agency and incudes distal influences such as curriculum policies, budget allocations, and staffing levels.	Knowledge, understanding and skills to help shape distal influences in order to facilitate learner engagement and participation.	Be proactive in keeping informed of updates to the assessment processes for the different exam boards and how to access the information. *(Current legislative and educational framework)*	An understanding that most standard assessment tools are not designed or standardised to take account of the developmental needs of young learners with VI… all assessments should be regarded as guides requiring interpretation taking account of the circumstances of the individual learner. *(Assessment)*	Specialist teacher liaises with school staff and parents over access arrangements for public exams, drawing on best practice guidance within VI sector to ensure that individual students are assessed appropriately.

Macrosystem Key drivers for change in inclusive education at national and international levels based within the 'rights' agenda.	Knowledge, understanding and skills to be able to navigate distal influences such as national legislation, statutory processes and education requirements.	Be proactive in keeping informed of changes in legislation and policy and to access relevant documents as they are released. *(Current legislative and educational framework)*	An ability to reflect on the effectiveness of their practice…. and…. of appropriate practices for learners with VI…in the context of current legislation, policies and advice for education and access, and local and national support provision. *(Specific Legislation and Policy)*	Specialist teacher advises mainstream school of their statutory responsibilities under new SEN legislation and promotes a policy of forward planning to ensure that a blind pupil can be fully included in all subjects.
Chronosystem This emphasis the significant role of the specialist teacher in seeking to promote progressive and mutual accommodation between the active learner and the changing learning environments	Knowledge, understanding and skills to ensure the child's environment is structured to promote learning and participation, and support the development of distinctive skills in order to afford independent learning.	Know how to encourage and support learners with VI to be independent learners. Understand how to balance providing targeted support…… with the need to develop independent learning. *(Teaching and Learning)*	An understanding of the range of barriers visually impaired learners face in accessing the curriculum, and of strategies for enabling access and support within different contexts. *(Teaching and Learning)*	Specialist teacher works with school to introduce new technology to a learner that allows direct access to interactive whiteboard, encouraging gradual reduction of direct support.

Table 2: Examples of distinctive knowledge, understanding and or skills of relevance to the role of the specialist teacher within the different bioecological systems.

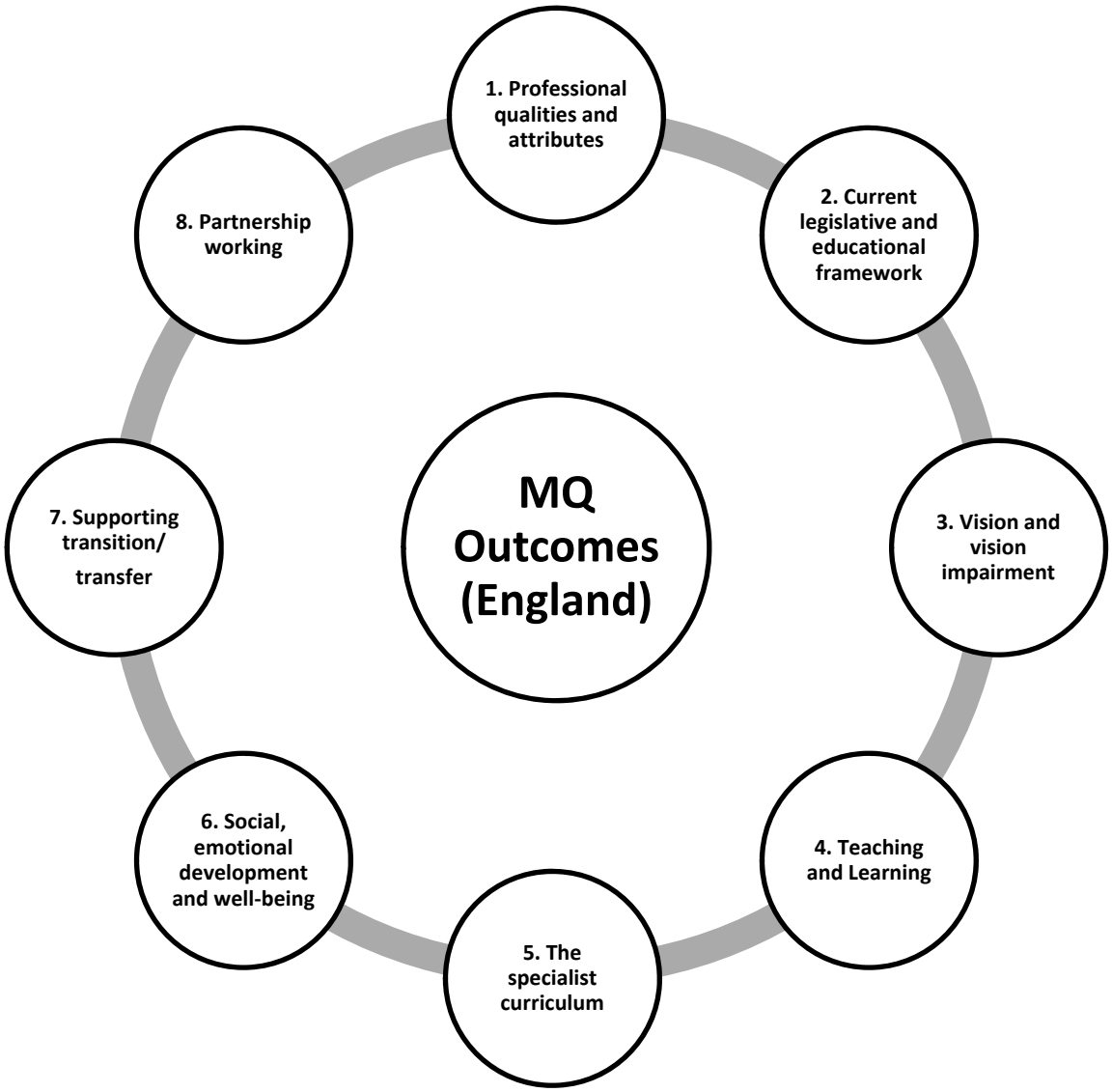

Figure 1. Summary of headings in the Mandatory Qualification specification for teachers of children and young people with vision impairments in England (adapted from NCTL, 2015).

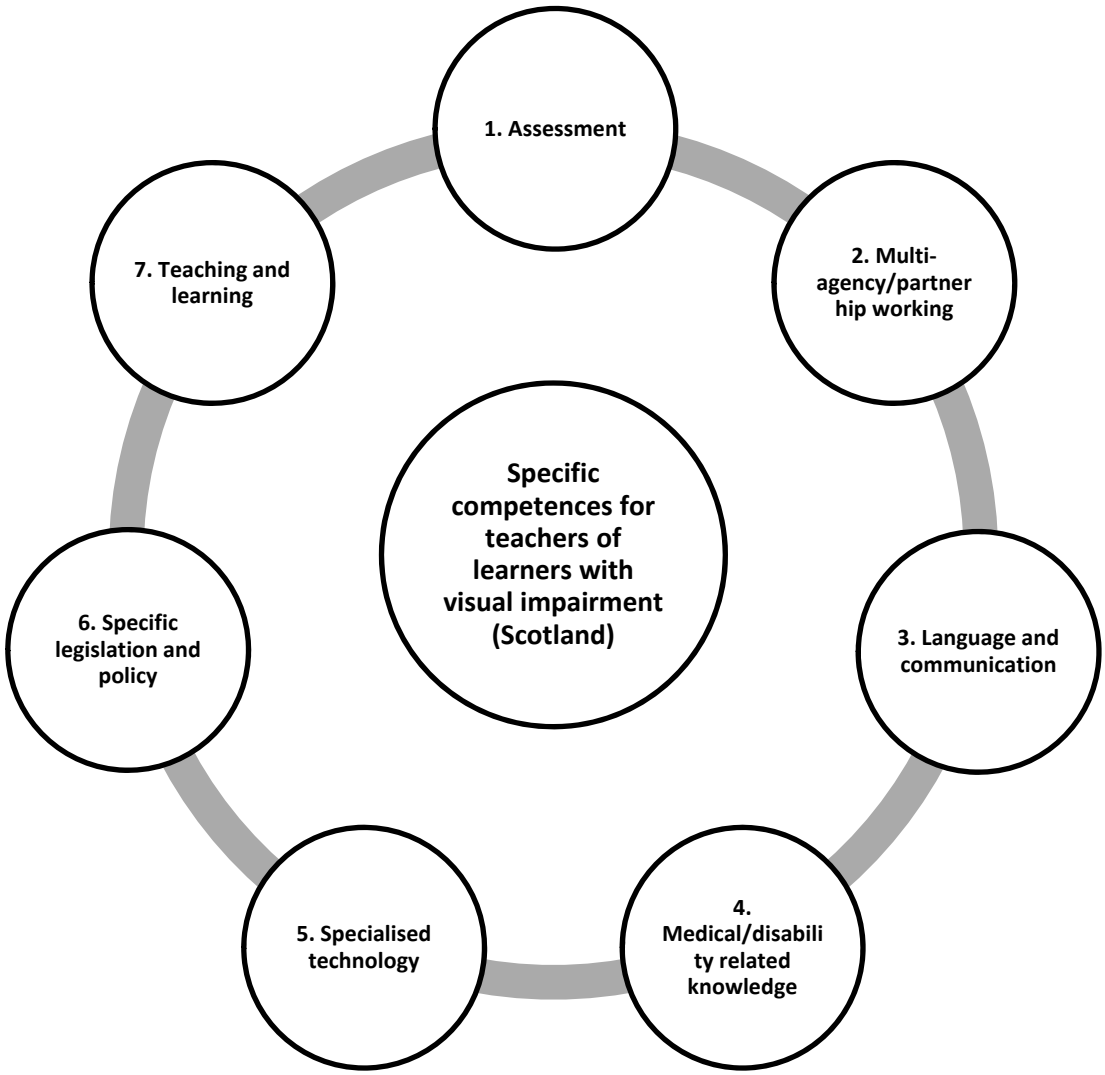

Figure 2. Summary of specific competences for teachers of learners with visual impairment in Scotland (adapted from – 'Appendix A: Competences for teachers of children and young persons who are visually impaired, Scottish Government', 2007).

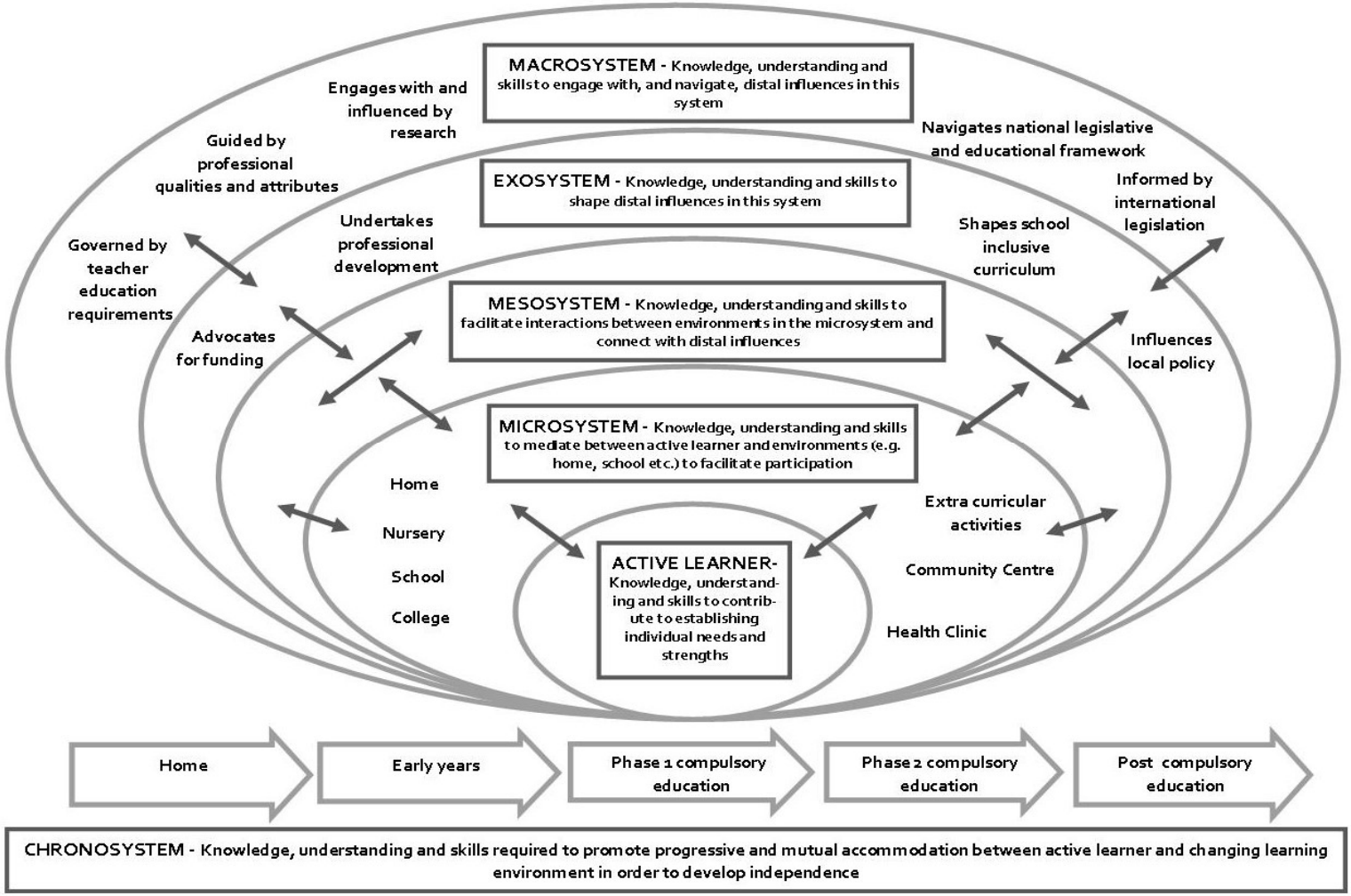

Figure 3. A bioecological model to illustrate the personnel preparation of specialist teachers of learners with visual impairments as potential 'agents of change' within the respective systems (adapted from Bronfenbrenner, 2005; Swanwick, 2014; McLinden and Douglas et al. 2016; Hewett et al. 2017).