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**MoDD: An ecological framework for dynamically and inclusively
differentiating the curriculum**

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Abstract

Investigating effective instruction to achieve quality educational outcomes for students in diverse classrooms is at the forefront of contemporary research and practitioner needs. Validated research examining service delivery models is still required to identify effective strategies that maximise student outcomes, especially for underachievers. Differentiation has evolved as an effective adjunct to inclusive practices in elementary school classes. Educators might differentiate the curriculum through their pedagogical attitude and practice. The pedagogical attitude of the teacher is a vital factor in providing inclusive differentiation. There have been continued calls for exploration of the complexities of dynamic classroom ecologies and the organisation, implementation and modification of instructional contexts for individual student needs by effective teachers rather than investigation of specific programs or methods. This paper outlines an ecological framework for differentiated practice that was developed from an in-depth review of the research literature and supported by an observational study of differentiated literacy practice in elementary school classes. The framework is illustrated within a schema and the dynamics of teaching and learning are explored within a cohesive ecological model of differentiated instruction. The paper examines a number of complementary strategies that can be used to differentiate the curriculum in inclusive educational contexts for all students but especially for gifted students, underachievers and students with special needs. A basis on which to build future effective differentiated practice for all students within varying educational contexts will be provided.

Introduction

Inclusive placement of students with special needs into the regular classroom has become more evident in recent years and provision solely in the regular classroom is commonplace (Foreman, 2005; Smith, 2006). Additionally, there has been greater recognition of students with learning difficulties, giftedness and understanding of students' different cultural backgrounds (Smith, 2008a; Westwood, 2001). Additionally, students come to class with different backgrounds, characteristics, abilities, beliefs, and needs. While, aged-based classes dominate regular educational provision today (Cornish, 2006; Good & Brophy, 2003; Wedell, 2005) pedagogy, student populations, resources, educational environments and the teachers within them exemplify extreme diversity in the elementary classroom (Smith, 2008; Westwood, 2001). Investigating effective instruction to achieve educational outcomes for students in these diverse classrooms is at the forefront of contemporary research and practitioner needs (Megay-Nespoli, 2001; Smith, 2006). Validated research examining service delivery models is still required to identify effective strategies that maximise student outcomes (Fuchs & Fuchs, 1998a; Lindsley, 1992; Logan & Malone, 1998; Smith, 2006; Westwood, 2001). Differentiation has evolved as an effective adjunct to inclusive practices in elementary school classes. Tomlinson et al. (2002) suggests that, differentiation is more a way of thinking that results in provision of quality teaching and learning according to individual student needs. The pedagogical attitude of the teacher is a vital factor in providing inclusive differentiation as teacher attitudes can inhibit effective practice, especially for gifted students (Geake & Gross, 2008; O'Brien, 2000).

There have been continued calls for exploration of the complexities of dynamic classroom ecologies and the organisation, implementation and modification of instructional contexts for individual student needs by effective teachers rather than investigation of specific programs or methods (Duffy & Hoffman, 1999; Smith, 2006). Differentiating the curriculum has evolved as one approach to address the diverse needs of primary students, inclusive of underachievers (Ashman & Merrotsky, 2008; Smith, 2006; Westwood, 2001). This paper outlines an ecological framework for differentiated practice that was developed from an in-depth review of the research literature and supported by an observational study of differentiated literacy practice in elementary school classes (Smith, 2006). The framework is illustrated within a schema and the dynamics of teaching and learning are explored within a cohesive ecological model of differentiated instruction. The framework is entitled Model of Dynamic Differentiation (MoDD). Differentiation can be dynamic and flexible, and educators have myriad strategies from which to build appropriate provisions for the individual needs of their students in diverse classrooms (Cornish & Garner,

2007; Smith, 2008a; Westwood, 2001). The paper examines a number of complementary strategies that can be used to differentiate the curriculum in inclusive educational contexts for all students but especially for gifted students, underachievers and students with special needs (Cornish & Garner, 2007; Smith, 2006). A basis on which to build future effective differentiated practice for all students within varying educational contexts will be provided.

In the recent research literature, the concept of the classroom as an ecosystem has received attention (Conway, 2005; Smith, 2008a). In a diverse classroom ecology, the educational and environmental contexts, curriculum and resources, teacher variables and student variables all interconnect dynamically (Laura, Marchant & Smith, 2008; Laura & Smith, 2008). In this view both teachers and students teach and learn in an interchangeable educational relationship that utilises teacher expertise to address individual student needs (Laura & Smith, 2008; Smith, 2006, 2008). A classroom ecology represents teacher, students, pedagogy and environment as inclusive, collaborative, complex, dynamic and supportive, which includes differentiating the curriculum to address individual student needs (Smith, 2008a).

In the research literature there are innumerable references to the dynamics of teaching and learning (Chessman, 2003; Comber et al., 2002; McGrath & Kirribilli, 2004; McLaughlin, 1995; O'Brien, 2000; O'Brien & Guiney, 2001; Smith, 2006; 2008; Tomlinson, 2001, 2005; Tomlinson et al. 2002; Wedell, 2005). Effective and dynamic teaching and learning involves a differentiated curriculum exemplified by teachers and students moving flexibly between slower, structured, guided learning and faster, open-ended, independent tasks (Smith, 2006; 2008). (McGrath & Kirribilli, 2004). Differentiation focuses on principles of effective teaching and learning that differentiates the environment, content, processes and products which are meaningful, build on prior understandings and are essential to future learning (Smith, 2008a; Westwood, 2001). These effective instruction principles were identified in an in-depth review of the research literature and underpin the MoDD framework presented in this paper (Smith, 2006). In the primary classroom ecology the curriculum can be dynamically differentiated by starting with the *individual needs* of the student, then progressing to planning and implementing *whole-class teaching and learning*, that provides *grouping contexts to scaffold* or accelerate learning experiences and expanding to include *specialised or independent learning* opportunities based on individual student needs (Smith, 2006; Smith, 2008a). Learning opportunities with the *support of the school community* and recognition of *parents as the primary educators* of their children are also important in a dynamic and communal approach to differentiating the elementary curriculum.

Individual needs of the student

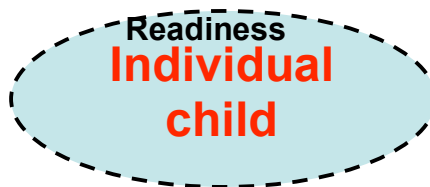


Figure 1 Individual student needs

The individual student is central to quality curriculum differentiation, especially if underachievement is to be addressed (Smith, 2008a). Therefore, the MoDD framework begins with the *individual student* (Figure 1). The centre ring, *individual student readiness*, represents the individual needs of the student on which instruction should be based. The student's potential, readiness for learning are identified and their needs profiled using a variety of complementary assessment techniques. The readiness of individual students is the main focus at the beginning of differentiation, though student strengths, interests and learning styles should also be a consideration during the profiling stage of the differentiation process. The individual student is influenced by the classroom ecology and teacher interactions in tandem. Assuming teacher attitudes are positive towards diversity and differentiation, the teacher begins to differentiate with provision in a whole-class context according to assessment that identifies individual student needs, inclusive of gifted underachievers (Smith, 2006; 2008).

Provisions within whole class contexts

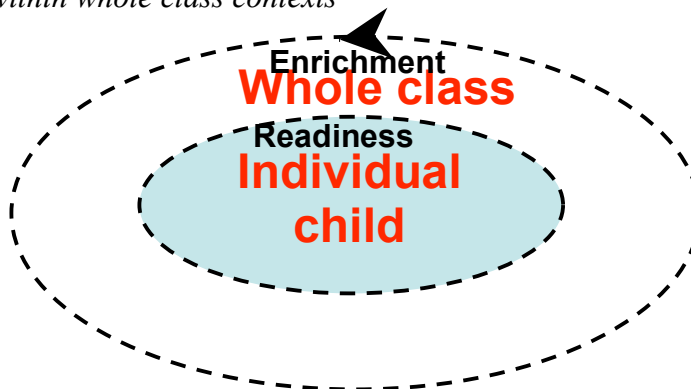


Figure 2 Enrichment in whole class context

Differentiated teaching and learning within a whole-class ecology is represented in ring two (Figure 2), which displays the *whole-class context* and differentiated techniques here might include: open-ended tasks and questioning; varying vocabulary; establishing learning centres; or using instruction based on

differentiation models appropriate to the whole-class, demonstrated by differentiation models such as Kaplan's (Gross et al. 2001) or Williams' (Gross et al. 2001) or McCluskey's Amphitheatre model. These strategies can be used individually or in various combinations depending on teacher expertise and student needs (Cornish & Garner, 2007; Smith, 2008a). The main focus of differentiation within the whole class context is provision of enrichment learning processes for all students in the classroom ecology (Smith, 2000b).

Supportive, scaffolded educational contexts

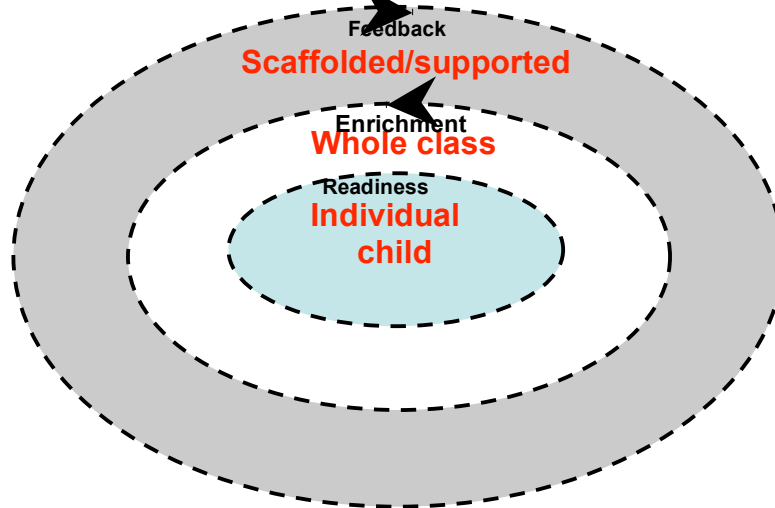


Figure 3 Feedback while scaffolding and supporting learning

However, there are times when students require additional support or scaffolding and this might be provided within varying grouping contexts, as represented in the strategies in ring three, *grouping for scaffolding/support* (Figure 3). Some students require more support and scaffolding than others and some only require intermittent support, and still within the classroom and not in pull-out situations. However, all students require support in various forms through their zone of proximal development (Dixon-Krauss, 1996; Smith, 2006). Support could include varying instructional grouping, tutoring, teaching enabling skills, mentoring, modelling strategies, guiding practice, balancing literacy instruction, adjusting or modifying presentations, using multi-media and other varied resources (Haager & Klingner, 2005; Smith, 2006; 2008). Strategies, such as teaching students skills to enable and empower their learning processes, support both the teacher and the student. If teachers require additional support to differentiate the curriculum then it is essential that combinations of these strategies are used in a differentiated classroom (Smith, 2006; 2008). The main focus in this ring is the constructive feedback on which to build further provisions. Feedback can be provided by the teacher, by peers, by

paraprofessionals or by supportive volunteers, which is also another strategy to support the classroom teacher as well as the students.

Specialised and independent learning opportunities

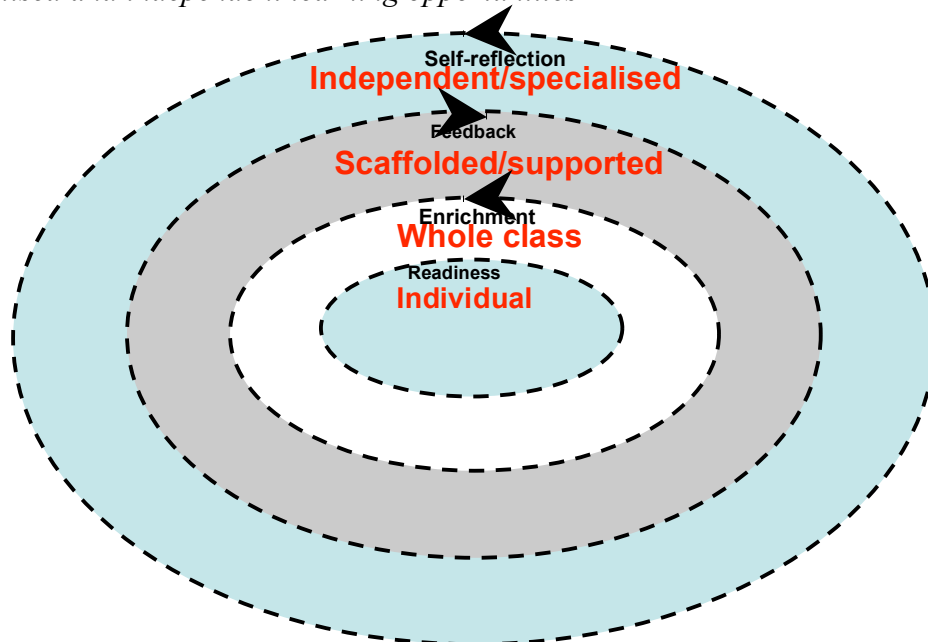


Figure 4 Self-reflection in independent or specialized learning contexts

Additionally, some students might require opportunities to work *independently* or have *specialised* instructional opportunities even within the classroom context, which is represented in ring four (Figure 4). Such opportunities might include: self-instructed learning; using contracts; aide-supported learning; independent practice; acceleration; curriculum compaction; and individualised teaching and learning (Larkin, 2001; Smith, 2008a; Tomlinson, 2001, 2005). All of these aspects should engage individual student learning. The main focus here is self-reflection, a strategy that enables the student to identify their strengths and needs and supports further evaluation of learning which informs future teaching and further student independence (Dixon-Krauss, 1996; Fullan et al. 2006; Smith, 2008a). Teaching students to be independent learners is an invaluable supplement to differentiation (Smith, 2008a).

Dynamic student, teacher, ecology and pedagogy interaction

The *dynamic interaction of teacher, student, ecology and pedagogy* are represented by arrows moving from the central ring to the fourth ring of the MoDD framework (Figure 5) (Smith, 2008a).

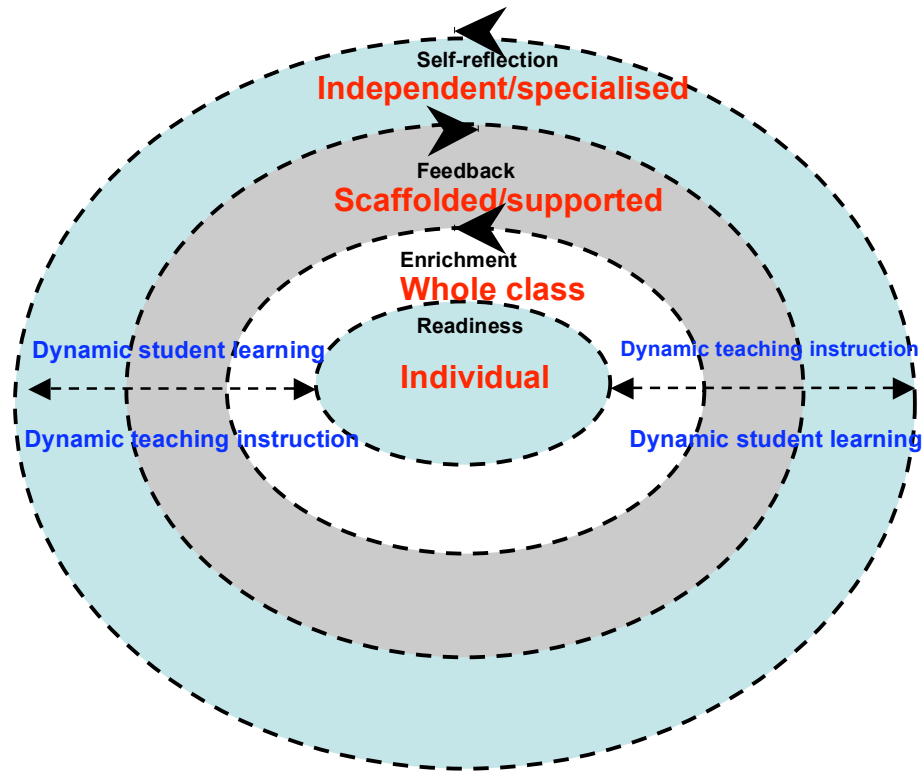


Figure 5 *Dynamic teaching & learning*

Teacher, student and class interactions are reflected in the flexible and dynamic movement of teachers between different teaching and learning contexts, as needed by individual students who also move flexibly and dynamically between instructional contexts according to their individual needs (Laura, Marchant & Smith, 2008; Laura & Smith, 2008; Smith, 2006; Tomlinson, 2001, 2005). This focus emphasises the central importance of the teacher or instructor. Teachers are central to provision of effective teaching for effective learning outcomes. The teacher consistently, flexibly and dynamically moves across the perceived borders (represented by broken lines) using assessment of individual student needs on which to base whole-class instruction that differentiates learning opportunities for all, to provision of extra support when needed, to extension, acceleration, independent or specialised instruction.

The student, in turn, also moves flexibly and dynamically across the borders as needed. Some students will spend more time in scaffolded, specialised or accelerated instruction, while others will remain more within the whole-class context. The effective instructional cycle, differentiation between engaging and motivating content, process and products permeates each ring cyclically and continuously. This notion is represented by the broken lines of the rings and the

arrows on each ring. The broken lines are shown as concentric in the MoDD framework but are not in reality. The framework itself should be viewed as dynamic, hence the lines could be seen as fluid rather than static. The lines could expand and contract in wave formations according to the depth of foci needed for each student and the teaching capacity within the inclusive classroom (Smith, 2006; 2008).

Support of the school community

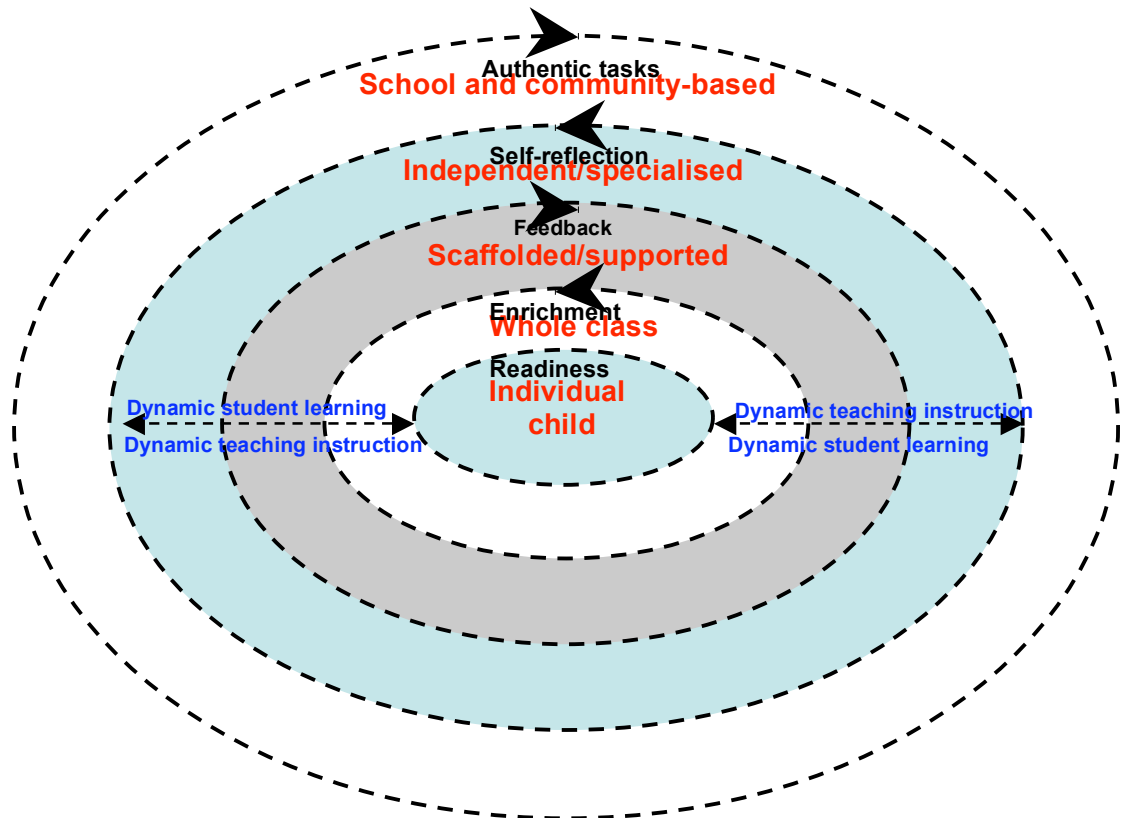


Figure 6 Authentic tasks in the School community

The first four rings represent inclusive education. However, there are other considerations in students' education. These considerations are more exclusive and include the school, wider community, familial learning opportunities and the influences of the global community. As the focus here is on inclusive education, the exclusive nature of other educational opportunities will not be described. However, it is necessary to impart two other aspects of the MoDD framework. Firstly, *the school community* as represented by ring five (Figure 6). The school community provides many opportunities to differentiate the learning environment through authentic content, by varying the processes of learning and

the learning outcomes. Utilising the school community outside the classroom supports both the teachers and the students. For example, ICTs can connect classrooms to enrich and accelerate learning, classes can pair for tutoring or mentoring and special classes or interests groups can be provided to assist in meeting individual student needs that perhaps can't be met within the classroom alone. For example, a school project on improving the school playground that is related to educational sustainability (Smith, 2008b). Pedagogy within the school community can add further opportunities for enrichment and acceleration for gifted students and support further the social and emotional growth of underachievers (Smith, 2008a).

Parents as the primary educators of their children.

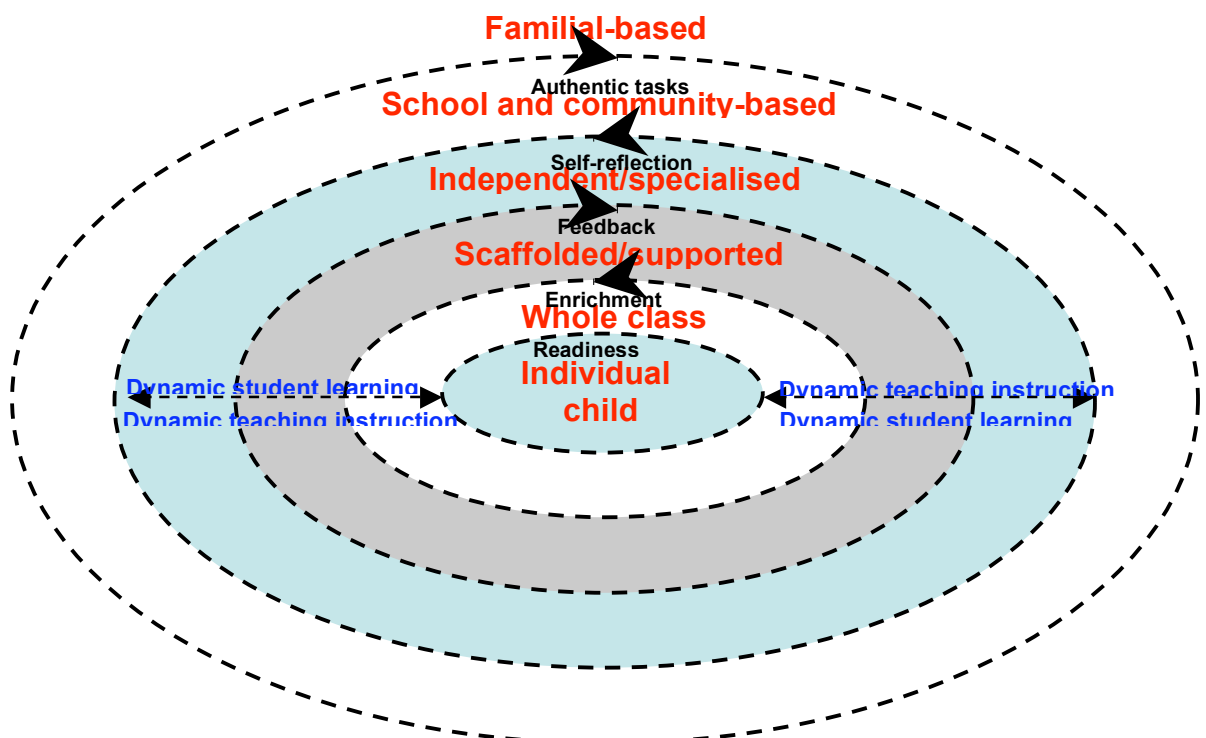


Figure 7 Collaboration with parents as primary educators

The student is central to all their learning opportunities but not separate from *familial guidance* as represented in ring six (Figure 7). Parents, guardians and caregivers are the primary educators of their children and are often a major contributor to inclusive education in the Australian context (Braithwaite, 1999). An OECD survey showed increasing parental involvement in educational programs (Kelley-Laine, 1998). Parents are involved in many ways, namely, meetings, supporting, volunteering, tutoring, mentoring, or on excursions. As the MoDD framework represents a dynamic model of education, each

concentric ring can be telescoped, or collapsed in on others, so facets within each ring touch, overlap and concertina in and out as consideration of the individual student's needs are addressed or different learning opportunities, ecologies or instructors are provided. Such telescoping and dynamic interaction justify the framework's name as dynamic instructional differentiation in an inclusive educational ecosystem (Smith, 2006). However, specialised educational opportunities might also be needed dependent upon individual needs and the degree of underachievement, and parents are pivotal in providing both inclusive and specialised education for their children. Parents are also able to add the dimension of love to teaching and learning in ways that other educators are unable to do.

MoDD: The dynamic differentiation framework

As shown in Figure 8 the MoDD framework identifies key variables relevant to differentiating teaching and learning and begins to illustrate the relationship between these variables. For example, the teacher may use whole class strategies, such as varying vocabulary, modifying questioning and implementing learning centres, with supportive strategies, such as flexible grouping, tutoring and mentoring as well as applying independent strategies, such as individualised contracts and ICTs. The dynamic differentiation framework represents an organised collation of effective instructional principles and practices that can lead to differentiated provisions for students with a range of educational needs in primary educational contexts. However, the relationships between the use of strategies within each ring in the MoDD framework is only beginning to be explored in the empirical research. Research in realistic teaching and learning situations might highlight further the nature of the relationships between teacher, student, ecological and pedagogical variables (for more on this see Smith, 2006, 2008). Nonetheless, the framework provides strategies for dynamic, integrated and communal curriculum differentiation, though every class is different and every class that differentiates will be different too.

[insert Figure 8 about here]

Figure 8 Model of Dynamic differentiation (MoDD)

Conclusion

Student diversity, the classroom ecology, principles of effective differentiation, the dynamics of teaching and learning for individual student needs and productive outcomes are all related factors associated with differentiating the curriculum. The MoDD framework presented here represents the dynamic nature of differentiating teaching and learning in diverse classroom ecologies. Students' individual needs are central to the framework, followed by differentiation in various contexts or environments, that is, within the whole class context, supported within smaller flexible groupings and independently. Teachers and students move dynamically and flexibly between these teaching and learning contexts according to student needs, the quality of the teaching and available resources. Effective differentiated teaching is varying content, process and products or outcomes within a consistent cycle throughout all learning contexts and provides the basis for motivating higher student engagement and addressing underachievement. Within each teaching and learning context there are many strategies that can be used independently or collaboratively. Each concentric ring of the MoDD framework is open to interaction with the others and the telescoping nature of the framework allows the influences of each ring to overlap with participants and entities interacting as needed for, with and by the individual student. This framework provides a dynamic way to differentiate the curriculum within today's diverse teaching and learning contexts.

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