Journal of Education and Practice
ISSN 2222-1735 (Paper) ISSN 2222-288X (Online)
Vol.7, No.23, 2016

Scaffolding Instruction Where It Matters: Teachers' Shift from Deficit Approach to Developmental Model of Learning

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Abstract
This paper revolves on the premise that teachers' adoption of developmental model is more likely to improve student learning and performance as compared to the utilization of deficit approach. Deficit or clinical approach to learning has the tendency to focus on things that students cannot do, thus followed by teacher prescriptions of a 'fix-it' remedy. There are a number of harmful effects of such approach on student learning particularly in creating the learning environment that appeals only to low-achieving students and one that unintentionally neglects the high-achievers - the results of teachers perceiving this group of students as facing no learning issues, thus requiring 'no fixing'. In contrast, developmental model focuses on student readiness and builds on the existing knowledge bases of every student. Despite extensive research that looks at the effects of deficit approach on learning, very little discussion is documented on its alternative and model of teaching that could potentially improve the performance of every student. Studies that look at teachers' utilization of developmental model are limited, the findings of these studies indicate that the developmental model encourages learning of both high achieving and low achieving students, and significant improvement in student performance across all ability groups. We take the position that developmental model assists teachers to better target their teaching at group and individual levels. Hence the discussion focuses on issues that surround deficit approach, the 'how to' with regards to the use of developmental model, as well as challenges and realistic expectations of its applicability.
Keywords: developmental model, deficit approach, targeted instruction, scaffolding, evidence-based teaching,

1. Introduction

This paper considers developmental approach to teaching, instead of deficit approach, to be more effective in enhancing student engagement in learning. The current method used in classrooms is largely 'deficit' (Bloy, Buckingham & Pillai, 2006; Black & Yasukawa, 2011; Cottrell, 2001; Peelo & Wareham, 2000) where learning support is not distributed efficiently across student groups (Care & Griffin, 2009), and this claim is backed by an increasing and substantive literature in the field. Deficit approach compels the teachers to identify weaknesses in student learning, hence teaching activities are geared towards fixing these 'deficiencies' (Griffin, Murray, Care, Thomas & Perri, 2010). Dudley-Marling (2007) describes the teaching within deficit system as focusing on the outcomes of student performance and teachers work on closing the gap between the low and high achievers. In closing this gap, Griffin et al. (2010) caution that content is delivered mostly through whole-class approach, at complexity level teachers feel is comprehensible to all groups of learners, particularly the middle and low ability students. Bloy et al. (2006) and Griffin et al. (2010) maintain that prolong exposure to unchallenging learning environment has a deteriorating effect on the performance of high ability students, hence strongly advocating the utilization of developmental teaching model that benefits the learning of every student.

The main argument we present in this paper is that predominantly, deficit approach though it appeals to large number of students in the class particularly the low-ability students, it does not support the learning of high ability students. Developmental approach to teaching, on the other hand, takes into consideration the learning readiness of each student in the classroom, and intervention is targeted at a point where the students are most ready to learn (Care & Griffin, 2009; Griffin, Care, Bui & Zoanetti, 2013; Griffin, Care & McGaw, 2012). In supporting this, the paper first explores both the deficit and developmental approaches and how they characterize the teaching and learning processes. The article then outlines challenges that teachers face in the adoption of developmental model, followed by the recommendations for future research. The developmental approach to teaching in this paper is discussed in relation to a specific teachers' professional development (PD) program participated by more than 200 schools in Victoria, Australia, where 'teachers' utilization of an evidence-based

teaching, learning and assessment process within a developmental learning paradigm would influence the improvement of student learning outcomes' (Griffin et al., 2010, p.150).

2. The Context of Discussion: The Professional Development (PD) Program for Teachers

Various forms of collaborative practices have been employed by the educational sector in establishing programs that address specific issues in teaching and/or learning. The element of collaboration becomes fundamental frameworks in the staff and PD programs, as countless studies point out strong correlation between instructional improvement and better student performance (Correnti, 2007; Johnson & Fargo, 2010; Rogers, 2007; Saunders, Goldenberg & Gallimore, 2009; Smith, Hofer, Gillespie, Solomon & Rowe, 2003). One such collaboration is the Assessment and Learning Partnerships (ALP) project, carried out by the Assessment Research Centre (ARC), Melbourne Graduate School of Education, the University of Melbourne.

ALP is an extension of a pilot project in 2004 known as the Literacy Assessment Project (LAP), a collaborative effort between ARC and the Catholic Education Office of Melbourne (CEOM). In this earlier project, student performance in relation to reading comprehension has been found to show significant improvement, and was influenced by teacher collaboration in the form of professional learning team (PLT). The work in this project was then extended to a current project with a focus on improving the performance of all students based on the assessment data and to base its operation within a developmental framework.

ALP emphasizes the use of assessment data in teaching, in which data-use should lead to instructional and learning improvement. The teachers involved in the program are encouraged to initiate change in relation to shifting from the reliance on deficit approach to the reference on developmental learning models, as well as withdrawing from the whole-class instructions and to adopt differentiated instructions. There are several aspects central to ALP: evidence-based instructional intervention, Assessment and Learning Partnerships setting, peer accountability, teacher discourse, developmental framework of learning and differentiated instruction. The internalization of all these aspects should lead to instructional improvement and should be visible through the improvement of student learning and achievement gains in literacy and numeracy (Care & Griffin, 2009). This paper, however, only focuses on one aspect of the program, that is the teachers' shift from deficit approach to the adoption of developmental approach to teaching.

ALPs operates through the dynamic of Professional Learning Teams (PLTs), a form of professional learning community (DuFour & Eaker, 1998; Himmelman, 1994; Padwad & Dixit, 2008; Yarnit, 2000; Zakaria, Care & Griffin, 2011) or distributed leadership (Clark & Clark, 1994; Scribner, Sawyer, Watson & Myers, 2007) within school settings that organize teachers into team as part of a school improvement strategy with the purpose of identifying and solving predefined problems (Scribner et al., 2007). Scribner and co-authors (2007) write that the collaboration of professional learning communities enhance the roles and relationships of school personnel in making instructional and educational decisions, hence many PD programs focus on collaborative aspect as a driver for teaching improvement. Many would argue that it is the training component of the PD programs that improve instructions, not its collaborative nature. The review of related literature has indicated otherwise. Collaboration is an essential component of successful PD processes, regardless of the method of partnership. Gerla, Gilliam and Wright (2006) believe that it is the collaborative aspect of PD programs that ensures teachers' attentive and active involvement. Gerla and her co-authors (2006) further elaborate that collaboration strengthens PD and encourage them to adopt the knowledge received during training as it assists teachers to see how new methodology could help their students. In most of the cases, without collaboration, the training program would not foster change in the teacher instructions. Patton (1997) finds that collaboration of participants is essential to be included in various phases of PD programs. In addition, various studies have reported direct correlation between collaborative PD activities and teacher instruction, which lead to desirable student behaviour and improved performance (Anders, Hoffman & Duffy, 2000; Birman, Desimone, Porter & Garet, 2000; Darling-Hammond, 1998; Gerla et al., 2006; Joyce & Showers, 1995; Richardson & Hamilton, 1994). Preskill and Torres (1999) write that change is more likely to be facilitated and sustained if it is a product of shared decision-making made by the people who are responsible for its implementation.

The PLT model fits easily within the ALPs structure because its key strategies support the PD module. The Northwest Regional Educational Laboratory (2005) identifies four key strategies that define PLT functions: focus on data, share and reflect on classroom practices, apply research and best practices, and improve teamwork and collaboration skills. Central to ALPs, is the use of assessment data to inform teaching, the use of evidence, the acquisition of large repertoire of skills that can be applied in the targeted subject area, and teachers working collaboratively (Care & Griffin, 2009). Zakaria et al. (2011) maintain that the appropriate use of assessment information will foster effective learning within which the teachers will be able to monitor and scaffold learning

and provide relevant opportunities for students to engage in.

In ALPs, PLTs operate in a slightly different manner depending on the type of schools and school situations. For participating primary schools, each team consists of the classroom teachers across two or more year levels whereas in the secondary schools, groups of teachers are organized based on either subject-focused or student group-focused. For PLTs in primary schools, a group usually consists of five teachers however group size is largely dependent upon school arrangement. PLTs in secondary schools appear to be functioning more effectively with slightly more group members.

Underpinning ALPs is a conceptual framework that demonstrates variables that link to student outcomes (figure 1). The framework represents the leadership and direction at region, network, school and PLT level and how these influence the structured PLT meetings. What happens during the meetings determine instruction through teachers' interplay of knowledge, attitudes and skills which then affect student outcomes. The focus of ALPs is on teachers' knowledge and skills, and these are strengthened through their active involvement in collaborative teaching teams. As many key aspects proposed in ALPs contradict teachers' existing practice, it is crucial that teachers' attitudes and beliefs be addressed. Many authors (Kagan, 1992; Mertzger & Wu, 2008; Pajares, 1992; Prime & Miranda, 2006; Richards & Lockhart, 1994; Thomas, Kun & Kun, 2007; Zakaria et al., 2011) have discussed the importance of understanding teacher beliefs and attitudes as a way of understanding their underlying behavior and teaching practices, and many studies looking at teaching practice also investigate teacher beliefs (to name a few, studies by Carrington, Deppeler & Moss, 2010; Gore & Ladwig, 2006; Johnson & Fargo, 2010; Pow & Yeung, 2007; Rogers, 2007; Taylor, 2003; Yates, 2006).

Care and Griffin (2009) highlight the importance of using collaboration to serve two purposes. First, as a basis for challenge; and second, in working collaboratively and not in isolation. According to the two authors, professional discussion among teachers would be healthier and more productive if teachers are able to challenge ideas based on evidence. A culture of sharing would only create conformity between teachers to accept ideas unquestioningly. ALPs encourages its participants to embrace the language of challenge, particularly in working with evidence (what students do, say, make and write), it is crucial for teachers to challenge ideas and suggest strategies. Another shift is for teachers to work collegially and not in solitary. Working together creates supportive environment for teachers to test out new approaches and share their experiences. The change from deficit approach to developmental approach of learning requires the teachers to change the use of language. The change in language then would impact on the change in thinking. Teachers need to use the language of assessment, the use of assessment data should be viewed from a new and refreshed point of view. It is crucial for teachers to believe that students can and will learn faster if student's point of readiness is identified, and that data-use can lead to more effective and informed decision-making.

3. Deficit Approach and Student Learning

Various research and literature have long addressed the heterogeneous nature of student learning (to mention a few: Gamoran & Berends, 1987; Kerckhorff, 1986; Kulik & Kulik, 1987; Nicholas, 1996: Oakes, 1985; Rosenbaum, 1980; Shields, 1984; Slavin, 1998; Tomlinson, 1999) and that students come to school from different backgrounds, life experiences and social status, with different interests, learning styles and preferences and with a wide range of learning abilities and readiness (to name a few: Brooks-Gunn, Duncan, Klebanov & Sealand, 1993; McLanahan & Sandefur, 1994; Tierney, Grossman & Resch, 1995; Wehlage, Smith & Lipman, 1992). Countless studies have also indicated teachers' awareness of this heterogeneity and the importance of taking this 'mix' into consideration in planning for their lessons. However, various studies have consistently testified that lessons continue to characterize whole-group instruction with very little differentiation in targeting the content appropriately to student abilities. When the teachers attempt to meet the learning needs of the students, they often operate within a 'deficit' framework in supporting the student learning. More provision of learning support is made available to students who are perceived to be 'in needs' of learning, hence low-ability group would receive more attention and support from the teachers than the high-ability students. This group of students is often overlooked as they are perceived to be self-competent and capable, and often have achieved certain degree of 'independence' in learning. As a result, the learning of these students is neglected and not challenged.

A number of authors (Black & Yasukawa, 2011; Bloy et al., 2006; Contrell, 2001; Griffin et al., 2010; Peelo & Wareham, 2002; Zakaria et al., 2011) describe the approach as costly and limited in impact and the teaching within it as remedial, reactive and specialist. The teachers focus on areas and aspects of learning that students cannot do, and tend to prescribe a 'package' of remedy via a 'fix-it' approach (Care & Griffin, 2009; Griffin et al., 2010). Assessment is geared towards identifying learning issues or problems that students are

experiencing so that teachers could re-target their teaching, rather than providing data in enhancing the learning of all students. Students are often labelled based on their academic performance and this could have a detrimental effect on low-ability students which may affect their morale and motivation in learning.

In his discussion of evidence inform decisions, Griffin (2008) addresses the importance for teachers to improve the learning of ALL students, and not just the select few in the group who are perceived as 'vulnerable', 'at-risk' or 'failing' (Sue et al., 2006). According to Griffin (2008), improving nations encourage the learning of both high performing students as well as low performing students, whereas Australia has a focus 'on remedial action for low performing students' (p.1). This explains Australia's position in PISA results which has slipped behind while some other countries have shown improvement.

Bloy and her co-authors (2006) stress the long-term effect of such practice on mid ability and high ability students. The authors describe such students as those who achieve average grades in assessments and who are not recognised as in need of learning until much later stage in their studies. The learning of these students would not be enhanced due to the lack of provision of learning support. They go through the course 'by resorting to safe surface approach to learning and consequently never reach their fullest potential' (p. 1) which would be otherwise possible if appropriate encouragement and support are provided (Bloy et al., 2006).

4. Developmental Approach and Student Learning

Conventionally, assessment is used to produce information which teachers see useful in identifying learning problems, an approach derived from a deficit or clinical model of learning (Care & Griffin, 2009; Cottrell, 2001; Griffin et al., 2010; Peelo & Wareham, 2002; Zakaria et al., 2011). In contrast to deficit model is the developmental models of learning that has a focus on student readiness. Griffin et al. (2010) write the models 'build on and scaffold the existing knowledge bases of every student' (p.158), and in doing so ensuring that the potential of all students is acknowledged and developed. Sharing the same view, Bloy et al. (2006) state that developmental learning model supports the learning of a wider range of students and provision of learning support is appropriately distributed across all groups of students in the class.

Tomlinson (1999) states that treating students as if they are variants of the same individual and hence feeling justified in teaching them the same subject in the same manner is the biggest mistake in teaching in the past centuries. Given a unique mix of students in a single classroom, learning of all students may not be achievable through one-size-fits-all instruction. Therefore, the teachers should use a variety of approaches to modify content, process, and product to meet students' diverse needs, interests and learning profiles (Tomlinson, 1999). Developmental approach to learning enables the teacher to identify the 'level' of learning readiness for every student, hence allowing the teacher to target intervention to this level. In ALP project, assessment data or evidence is used to identify this level, a point of learning where Vygostky described as the 'zone of proximal development' or ZPD. Care and Griffin (2009) indicate that this is the point where student is most ready to learn and any interventions targeted at this point would yield maximal impact in learning. Every student's ZPD is different and a single classroom of students may be represented by a range of ZPDs. It is important that this range of learning readiness be captured and plotted in a developmental progression. After a student's ZPD is identified and referred to the developmental progression, appropriate learning goals can be set for that student and the group as a whole. Lesson planning and interventions should be developed based on these levels in mind. Scaffolding should also be introduced at this level and there should be a gradual withdrawal of learning support to encourage students to take authority in their learning and to learn independently.

4.1 Zone of Proximal Development (ZPD)

The zone of proximal development (ZPD) is one of the two aspects highlighted in the social development theory (Vygostky, 1978), developed by Lev Vygotsky who had contributed greatly to the field of cognitive development and psychology (Lantolf, 2000; Turuk, 2008; Wertsch, 1985). Vygotsky (1978) noticed that children's cultural development interacts at two different level: social level followed by individual level; and this development first occurs at interpsychological level (between people) and then at intrapsychological level (inside the child). Vygotsky believed that students' actions are the results of the processes of appropriation in which they transform the knowledge acquired during the learning process, and not just through copying teachers' capabilities.

Vygotsky (1978) described the zone as 'the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under the guidance or in collaboration with more capable peers' (p.86). He suggested that learner's developmental level consists of two parts: the actual developmental level and the potential

developmental level. The ZPD illustrates an area in which the learners could accomplish themselves as well as an area in which achievement is accomplished through the assistance of a more competent person. Described as dynamic in nature, ZPD constantly changes according to students' attainment of knowledge.

Lantolf (2002), Shayer (2002) and Wertsch (1985) explain that Vygotsky's conception of ZPD is to address two issues in educational practices. First, that classroom assessments only measure the actual level of development and fail to determine the potential ability of the child. Vygotsky was in the opinion that assessment should be able to predict a child's future growth, what the child is not able to do at the moment but will be accomplished in the future through the internalization of various processes as a results of interaction with environment and more able peers. Therefore, he asserted that assessment systems in schools need to take into account students' ZPD. With respect to the second practice, Vygotsky observed that teachers aim their instructions on the developed functions when they should be addressing the developing functions. This instructional practice, if prolonged, would not guide teachers to maximize student potentials.

In applying the concept of ZPD to the context of classroom learning, it explains the gap between what the teachers are trying to teach and the current state of student development in that area (Wertsch, 1985). If the gap between these two areas is too wide, instructional efforts would not be effective; whereas if the gap is too small, the learners would not be challenged to learn. Therefore, it is crucial for teachers to identify where the learners are and try to assist the learners to achieve meaningful learning. One of the ways for teachers to do this is through scaffolding.

4.2 Scaffolding

After student's ZPD is identified, the teacher should scaffold student learning to move the student faster to the next level of learning. Vygotsky (1978) described scaffolding instruction as 'the role of teachers and others in supporting the learner's development and providing support structures to get to that next stage or level (p.176). During early stage of learning, a learner may need full support from the teacher. However as the learner developed, the responsibility is gradually shifted to the learner whilst the teacher slowly withdraw the support provided (Lantolf, 2002; Raymond, 2000; Shayer, 2002). Raymond (2000) explains that this development refers to '…more sophisticated cognitive systems, related to fields of learning such as mathematics or language, the system of knowledge itself becomes part of the scaffold or social support for the new learning' (p.176). Raymond continues that one of important aspects of scaffold instructions is that it is temporary in nature. Hartman (2002) asserts that the goal of using scaffold instructions is usually to produce an independent and self-regulating learner and problem solver. Hartman provides several uses of scaffold instructions such as models, cues, prompts, hints, partial solution, think-aloud modelling and direct instruction.

4.3 Differentiated Instruction

The National Center on Accessing the General Curriculum (2010) of the United States defines the approach as the process to approach teaching and learning for students of differing abilities in the same class. In differentiating instruction, teachers have the ability to recognize students' varying background knowledge, readiness, language, preferences in learning, interests and to react responsively. Using the approach, Tomlinson (2003) describes that teacher 'proactively plans varied approaches to what students need to learn, how they will learn it, and/or how they can express what they have learned in order to increase the likelihood that each student will learn as much as he or she can as efficiently as possible' (p.151).

In order to identify student's ZPD, teachers must first shift their reliance on deficit approach of learning to developmental model of learning. The use of developmental models allows teachers to scaffold student learning appropriately (Care & Griffin, 2009), in which teachers provide assistance during the early phase of learning and gradually withdraw this assistance as the learners develop (Vygotsky, 1978). Working within developmental models, teachers use evidence of student learning to identify students' ZPDs. This represents student readiness where targeted intervention produces maximum impact and the scaffolding of this learning will move students to learn faster along a path of increasingly complex competence, knowledge and skills.

5. What to Take In and What Ultimately Have to Go

To embrace the kind of teaching promoted by ALPs, change is inevitable. One important challenge is the withdrawal from traditional approach of teaching that is governed by deficit approach and whole class instruction, to practice that is characterized by developmental learning model. Operating under developmental learning paradigm, teachers focus on what students can do. To employ teaching based on developmental model of learning it is best to do it collectively, collaboratively with other teachers supported by the system. One way

to conduct teaching is by basing it on developmental framework that explains students' level of development and what learning is developmentally appropriate. Once a student's level of development is identified, the teacher's decision making shifts from what the students need to learn to how the student can best learn at that level. This involves the teacher making decisions about what intervention strategy is best for the student (Care & Griffin, 2009).

There are four elements in the classrooms that can be differentiated in supporting the learning of all students: content, process, products and learning environment (Tomlinson, 1999, 2003). Tailoring the evidence to identify students' levels of learning readiness requires teachers to shift from whole class approach to differentiated instructions. In addition, ZPD is individual in nature, each student has a different zone and targeting instruction to the levels that the students are at is simply not possible to be performed within whole-class perspective of teaching.

Another challenge to developmental model of learning is to combine the knowledge of content area with sound knowledge in assessment and reporting, and to use these to identify students' ZPD and to design appropriate intervention strategies. Before evidence can be used to locate students' ZPDs, assessment data needs to first be transformed into usable information through the process of data analysis and interpretation. Despite the fact teachers are surrounded by plethora of data from formal and informal assessments (Hattie, 2005; Timperley, 2009; Matters, 2006; Rowley & Congdon, 2006), this data needs to be turned into the kind of information that can be used by teachers to modify their teaching practice (Hattie, 2005; Timperley, 2009). Central to the use of assessment data is data availability for teachers. For high quality information to be produced, classroom assessments need to highly valid and reliable (Timperley, 2009). Therefore, teachers need to be equipped with knowledge in conducting high quality assessments, the ability to interpret data and to use this as evidence in effectively identifying students' ZPDs.

Various studies have consistently testified that 'change' is a massive word for teachers. Studies conducted in the past have affirmed the fact that teacher change is complex and multifaceted in nature (Pajares, 1992; Jackson, 1992), and that teacher change as a result of PD involvement is often slow (Garet, Birman, Porter, Desimone, Herman & Suk Yoon, 1999; Porter, Garet, Desimone, Kwang & Birman, 2000; Smith et al., 2003). This is when the significance of teacher collaboration comes into play. Care and Griffin (2009) highlight the importance of using collaboration as a means of creating supportive environment for teachers to test out new approaches and share their experience. Working together with similar point of view ensures that current behaviour is sustained. A number of studies indicate that teachers are more likely to change when the tested out strategies or approaches lead to significant improvement of student learning outcomes (Bonner, 2006; Clark & Peterson, 1986; Johnson & Fargo, 2010; Rogers, 2007; Saunders et al., 2009; Yates, 2006). Upon trying out new strategies, teachers are more likely to revert back to old approaches if lessons do not go as planned. Hence, teacher collaboration provides platform for teachers to work together, to address classroom issues and to ensure sustainability of teaching behavior over a period of time (Birman et al., 2000; Darling-Hammond, 1998; Gerla et al., 2006).

6. Direction for Future Research

Developmental approach to teaching and learning is relatively new, thus a plethora of methodologies could be employed. We recommend that researchers adopt qualitative approach in the manner of case study or longitudinal study which includes classroom observation and/or interview. Researchers should look beyond student scores to identify the impacts of reliance on developmental model on various aspects of teaching practices and student engagement. It would also be valuable to investigate the relationships between teacher beliefs and teaching practice when teachers withdraw from deficit model and begin to approach their practice with the use of developmental model. Findings with regard to teachers' motivations, challenges and strategies for making the shift are valuable to academics and policy makers in carrying out PD programs and in introducing educational reform.

7. Conclusion

The discussion in this paper links the application of developmental model of learning to several aspects: identification of students' zone of proximal developments of levels of learning readiness, scaffolding of student learning, targeted instruction at levels of readiness which also involves teachers to differentiate their instruction. Each of these is approached within the context of ALPs project, the professional development program for Victorian teachers. Selected studies are looked at within which their discussions highlight and support the premise established: that the utilization of developmental model of learning allows teachers to scaffold

individual learning which then improves learning outcomes (Ash & Levitt, 2003; Leat & Nichols, 1997; Simons et al., 2003; Timperley, 2009; Wiltshier, 2007); that assessment data can be used to identify learning readiness for every student (Care & Griffin, 2009; Timperley, 2009); and that with the identification of this learning readiness, teaching can be better targeted to this level and this would enhance the learning of every student (Care & Griffin, 2009; Kirkup et al., 2005; Leahy et al., 2005).

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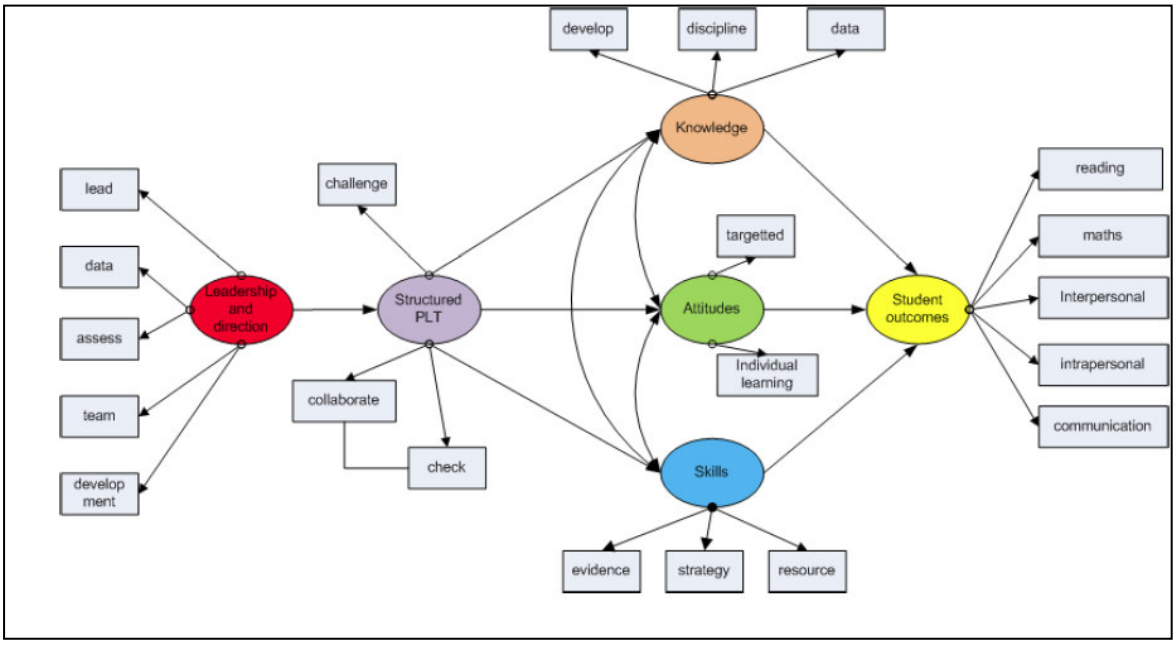

Figure 1. ALPs' Conceptual Framework