The Application of Vygotskian and Piagetian Theories to Higher Education: Practical Implications for Classrooms

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Abstract

Two central theories to the constructivist learning approach are Piaget’s genetic epistemology theory and Vygotsky’s social development theory. A number of scholars have suggested that although these theories originally focused upon children, they also hold practical implications for adult learners. We purport that these theories can be applied to higher education classrooms to support student’s cognitive and social development in learning.

Introduction

This paper focuses upon Educational Psychology. This branch of applied psychology assists with “understanding teaching and learning in educational settings” (San-trock, 2001). This paper centers upon the application of Vygotskian and Piagetian theories to higher education, and the implications for classrooms. In particular, we center upon cognitive development and collaborative learning. These are discussed in relation to two problems:

• How student’s development in higher education can be supported.
• How collaborative learning can aid cognitive development.

In each case, a key theory is discussed along with practical implications and the extent of their usefulness in these addressing problems.

Piaget’s Cognitive Development Theory

Piaget’s Cognitive Development theory has provided insights into cognitive development (Piaget, 1950; 1972). Although Piaget’s theory focused upon children, it also applies to adults (Sunderland, 1982). The original theory identifies four developmental stages that people progress through from birth to the age of fifteen: sensori-motor, pre-operational, concrete operational and formal operational. The sensori-motor stage occurs during the first two years within which a child will learn the immutability of certain objects existing in their environment (Piaget, 1972). This stage is concerned with sensori-motor actions such as sucking, grasping and moving around in the environment.

During the pre-operational stage, the child moves away from the focus of motor actions and begins to understanding aspects symbolically. At this point, the child becomes more conscious of the objects they interacted with whilst in the sensori-motor period. During the ages of eight to eleven the child enters the concrete operational period where they are capable of making deductive inferences. In the formal operational stage, the child is able to generalise and hypothesise. According to the theory, a child progresses through these four stages by a process of equilibration, in which they construct their own understandings by organizing knowledge derived from personal experiences. This allows the child to construct expectations of newly encountered experiences (Phillips, 1981). The process of equilibration involves three steps. First a disturbance occurs as a conflict between what is expected and what actually happens. Second, regulations are used to reduce the disturbance. Third, the child is able to adapt to their environment through ‘assimilation’ and ‘accommodation’. Assimilation involves modifying a new experience so that it becomes familiar, whereas accommodation involves changing the cognitive structure so the child can make sense of their environment (i.e. create a new schema). According to Piaget the adaption process is vital to learning as it enables schemata to continuously develop. Scholars have applied Piaget’s developmental stages to adult students. An example is Kolb (1984). Kolb related Piaget’s developmental stages to experiential learning for adult students.

Practical implications

There are a number of implications arising from Piaget’s theory. Firstly, development can be facilitated by placing the student in learning scenarios which require adaptation by means of assimilation and accommodation processes. Secondly, learning materials should be directed at an appropriate developmental level for the student (Elliot et al, 2000). Piaget asserts that although all individuals progress through the same developmental stages, they do so at different rates. This further emphasizes the need for classroom materials to be directed at individual learner’s development level and for practitioners in Higher Education Institutions to focus on the concept of student development (Gatten, 2004).

Usefulness in addressing problems

Piaget’s theory has been helpful in understanding development, in particular, his work on cognitive structures which were lacking from learning theories at the time (Case, 1993). Piaget’s suggestions that individuals acquire new systems of cognitive operations at different points during their growth proved to be a key contribution to constructivist theory.

This equipped educators with an awareness that learning materials should be presented in a way that could be assimilated by a student’s cognitive structures (Kamii & Radin, 1967). Additionally, Piaget’s assertion that individuals actively construct knowledge through the process of reflection gave rise to the perspective of learners as active participants in their learning (Gagne & Briggs, 1979).

However, some scholars have argued that the stage model is rigid and that movement between developmental stages is gradual (Grave, 2004; Bjorklund, 1995). Piaget’s work has also been criticized for overestimating the achievements of the later stages (Meadows, 1993; Siegal, 1997; Meltzoff & Gopnik, 1997). Some scholars assert that Piaget overlooked cultural effects (i.e. Dasen, 1994). More recent studies have identified that other cultures have a higher regard for the basic level of concrete operations (i.e. Hopgood, Rosenberg & Rush). Additionally, Piaget’s research methods have also been criticized as his source for the theory arose from observations of his own three children. Scholars claim that it is problematic to generalize his conclusions due to such a small sample size (Edwards et al, 2000; Cherry, 2014).

Vygotsky’s Social Development Theory

Vygotsky’s theory emphasizes the importance of social interactions for learning (Vygotsky, 1978). Vygotsky refers to this process as the ‘Zone of Proximal Development’ (ZPD). The ZPD centers on developing a student’s skills through guidance and collaboration. The theory asserts that cognitive development is determined by two levels; the ‘actual developmental level’ and the ‘zone of proximal development’. The ‘actual developmental level’ refers to a student’s current development, whereas, the ‘zone of proximal development’ refers to the distance between what is currently known and what can be known by the student.
According to Vygotsky, learning occurs within the ZPD, forming a bridge between what the student knows today and what they are capable of knowing tomorrow. This reflects the theory’s focus upon social interactions and cultural contexts in which shared experiences occur (Crawford, 1996). According to the theory, learning scenarios directed at a student’s actual developmental level will prove ineffective. Instead it is suggested that learning tasks should be targeted a higher developmental level, slightly above the student’s level of competence. Vygotsky’s concept of the ZPD suggests that peer interaction is beneficial for learning where the interaction concerns a less knowledgeable student working with a more knowledgeable student (Driscoll, 1994; Hausfather, 1996).

**Practical implications**

There are a number of implications for education arising from social development theory. The role of the teacher should be that of collaborator and guide as opposed to disseminator of knowledge (Tavangarian et al, 2004). Additionally, it is important for teachers to engage and motivate students in their learning and to provide learning tasks which increase the student’s level of knowledge. The concept of the ZPD advocates that discrepancies between the student’s progress and the solution are identified, and that the teacher should provide guidance where appropriate. It is important that assessment methods consider the ZPD to effectively target the student’s actual assessment methods consider the ZPD (Elliot, S., Kratochwill, T. & Littlefield-Cook, J. 1993). Some scholars have criticized Vygotsky’s theory (i.e. Bruner, 1984; Wertsch, 1984). While the ZPD is a concept that is widely applied in education, some state that it provides little opportunity for an explicit theory of the developmental stages involved (Robbins, 2014). The notion of the ZPD has been criticized for the lack of explanation as to how the process is dialectical. Some argue that the application of the ZPD is not always effective as a student’s potential development could be underestimated if guidance is provided by an incompetent tutor (Valsiner & Van Der Veer, 1993).

**Usefulness in addressing problems**

Vygotsky’s theory has been helpful in understanding how collaborative learning can aid cognitive development. Many elements of Vygotsky’s theory have been widely applied in education (Leichsenring, 2014; Leat & Nichols, 1997). For example, mediated learning (Feuerstein 1980) scaffolding (Wood et al, 1976), assisted performance (Tharp & Gallimore, 1988) and reciprocal teaching (e.g. Brown & Campione, 1990). It has been reported that in applying these techniques teachers have been able to increase test scores of students (Blake & Pope, 2008). Many educators have applied Vygotsky’s concept of scaffolding which enables students to complete a task that would ordinarily be beyond their unassisted efforts (Daniels, 2001; Maddux, Johnson & Willis, 1997). Some scholars have criticized Vygotsky’s theory (i.e. Bruner, 1984; Wertsch, 1984). While the ZPD is a concept that is widely applied in education, some state that it provides little opportunity for an explicit theory of the developmental stages involved (Robbins, 2014). The notion of the ZPD has been criticized for the lack of explanation as to how the process is dialectical. Some argue that the application of the ZPD is not always effective as a student’s potential development could be underestimated if guidance is provided by an incompetent tutor (Valsiner & Van Der Veer, 1993).

**Conclusions**

This paper has presented two theories from the field of Educational Psychology. These were discussed in terms of their application to higher education classrooms and how student development can be supported and how collaborative learning aids cognitive development. This paper discussed the extent to which the theories have been useful in addressing problems. Although there are fundamental differences between the theories, both have been widely applied to educational settings. Despite their criticisms they remain widely used today.

**References**
