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From Theory to Practice: What does the Metaphor of Scaffolding Mean to Educators Today?

Abstract

The current emphasis on rising educational standards in Australian society (eg A Commonwealth Government Quality Teacher Initiative, 2000) has stimulated a growing interest in Vygotsky's socio-cultural theory widely renowned for its profound understanding of teaching and learning. The metaphor of scaffolding commonly viewed as underpinned by socio-cultural theory and the zone of proximal development in particular, has become increasingly popular among educators in Australia (Hammond, 2002). Teachers find the metaphor appealing as it "offers what is lacking in much literature on education – an effective conceptual metaphor for the quality of teacher intervention in learning" (Hammond, 2002, p.2). However, there is no consensus of opinion among educators on the specific characteristics that constitute successful scaffolding. On the contrary, the current interpretation of scaffolding seems to have been drifting away from the Vygotskian view of teaching and learning and appears to have become an umbrella term for any kind of teacher support (Jacobs, 2001) and therefore, cannot serve the purpose of justifying the quality of teacher intervention. Furthermore, when taken out of its theoretical context, scaffolding tends to be interpreted as a form of direct instruction (Donovan & Smolkin, 2002), which invalidates the Vygotskian idea of teaching as co-construction of knowledge within student-centred activities. Such an interpretation of the metaphor of scaffolding is an unfortunate step back to a traditional, pre-Piagetian way of teaching which is

adult-driven in nature and often results in "the imposition of a structure on the student" (Searle, 1984, in Stone, 1998, p. 349). In spite of a number of limitations of the metaphor, that have been discussed by socio-cultural theorists (e. g., Stone, 2001), it remains highly popular among educators. To fulfil teachers' expectations of scaffolding as being an effective teaching tool, it needs to be understood within the framework of its underlying theory. This project aims to analyse understanding of the concept of scaffolding by educational researchers and practitioners in its connection to the Vygotskian view of the role of instruction in nurturing children as active learners.

Introduction

As the quality of teaching has become a focus for educational researchers and practitioners (e. g., A Commonwealth Government Quality Teacher Initiative, 2000), the metaphor of scaffolding, based in the well-respected theory of Vygotsky, is getting increasingly popular among educators (Hammond, 2002, Wells, 1999). In recent years, a large number of educators and researchers have used the concept of scaffolding as a metaphor to describe and explain the role of adults or more knowledgeable

able peers in guiding children's learning and development (Stone, 1998; Wells, 1999; Hammond, 2002; Daniels, 2001). Teachers find the metaphor appealing as it "resonates with their own intuitive conceptions of what it means to intervene successfully in students learning" (Mercer, 1994, in Hammond, 2002, p.2). However, due to the metaphorical nature of the term and its multiple interpretations, scaffolding does not provide educators with clear and definite guidelines on the ways that it should be used to achieve successful teaching. In addition, a number of socio-cultural theorists talk about a limited value of the metaphor of scaffolding as a teaching tool (as comprehensively discussed by Stone, 2001).

As the metaphor of scaffolding remains increasingly popular among practitioners and educational researchers, there is a need for a clear articulation of the basic theoretical principles which will ensure its appropriate use. This is evident in the example from my teaching pre-service early childhood educators presented below.

Ann (pseudonyms have been used for the students and teachers mentioned in this paper), a third year early childhood student, was undertaking her teaching practice in a Kindergarten classroom. At the Faculty of Education reflection day Ann approached me in tears. The reflection day are usually held half way through the practicum in order to give students an opportunity to share their classroom experiences with peers and lecturers. Ann was not happy with her supervising teacher, Ms. Brown, who would not allow her to scaffold the pupils reading comprehension in her classroom. Ms. Brown demanded of Ann that books be read to the children without comments or questions. The teacher's concern was that Ann would impose her own understanding of the story on her students which might suppress their spontaneity and freedom in interpreting the text and take away their ability to think for themselves. Mostly, Ms. Brown was concerned with Ann's questions on "story prediction". She didn't think that asking specific questions such as, "Do you think the Duck will come back?" was appropri-

ate. To support her claim, Ms. Brown, an educator of the older generation, referred to the theory of Piaget which she studied in her undergraduate degree. Ann was very disappointed with her supervising teacher, as she believed in scaffolding as one of the most advanced teaching technique to date. She also felt that to her, scaffolding was a natural way of sharing reading with young children. As an educator, she felt somewhat constrained and restricted by not being able to talk to children and ask questions while reading to them.

For a new generation of educators, such as Ann in the example above, the metaphor of scaffolding provides a justification for their teaching strategies in the classroom. The link of the metaphor to Vygotskian theory makes it attractive to teachers as a valuable educational tool. However, it does not provide clear and definite guidelines on exactly how it should be used to achieve a fine balance between guiding children's understanding but not suppressing their initiative and encouraging them to become independent thinkers and self-motivated learners. For example, in the case of Ann, was the question, "Do you think the Duck will come back?" a good question to ask or should some other teaching techniques have been used? To answer such questions, the conceptual basis of scaffolding needs to be analysed.

This paper attempts to examine the relationship between perceptions of scaffolding by educators and the principles of teaching in the zone of proximal development as its theoretical basis. In particular, a question of great importance is, what characteristics do educational researchers attribute to scaffolding to describe it as different to other kinds of teaching instruction? And how do these characteristics connect to those of teaching in the zone of proximal development? In the following sections of this paper different interpretations of scaffolding, the zone of proximal development and the relationship between the two will be examined.

Scaffolding and the Zone of Proximal Development

Vygotskian socio-cultural theory, and the concept of the zone of proximal development (ZPD) in particular (Vygotsky, 1962, 1978), is commonly regarded as the theoretical underpinning of scaffolding. Supporting children's active position in their learning and assisting them in becoming self-regulated learners is at the heart of Vygotsky's concept of the ZPD. The main aspiration of teaching in the ZPD is to see students being actively engaged in their learning with the future prospect of becoming self-directed, life long learners. The ZPD, defined as the distance between a student's assisted and independent performance (Vygotsky, 1978), points to the meaning of teaching as the transformation of socially constructed knowledge into that which is individually owned. This type of teaching assumes a specific paradigm of teacher-student interaction where the role of the adult is that of collaborator and co-constructor. A strong emphasis is on the active position of the child, which is essential for becoming a self-regulated learner. According to Vygotsky, the educational process should be based on the student's engagement in an individual activity, where "the teacher is the director of the social environment in the classroom, the governor and guide of the interactions between the educational process and the student" (Vygotsky, 1997, p.49). The teacher doesn't influence children directly, but through shaping and fashioning their social environment. The way that adult interacts with the child is essential to supporting children as active, self-regulated learners (Diaz, Neal & Amaya-Williams, 1990). "The teacher's role is to provide the path to independence – a goal of all educators" (Bodrova & Leong, 1996, p. 3).

In spite of the consensus that Vygotskian socio-cultural psychology and the notion of the zone of proximal development are at the

heart of the concept of scaffolding (Berk, 2001; Daniels, 2001; Wells, 2001; Krause et al, 2003; McDevitt & Ormrod, 2002), the interpretations and explanations of the exact ways that scaffolding relates to it have been different. These range from understanding scaffolding as a direct application and operationalisation of Vygotsky's concept of teaching in the zone of proximal development (Wells, 1999), to the view that the notion of scaffolding only partially reflects the richness of Vygotsky's zone of proximal development (eg Daniels, 2001). In addition, the limitations of the metaphor of scaffolding in interpreting the zone of proximal development have been revealed (Stone, 1998).

Gordon Wells referred to scaffolding as "a way of operationalising Vygotsky's (1987) concept of working in the zone of proximal development" (1999, p.127). He identified three important features that give educational scaffolding its particular character: 1) the essentially dialogic nature of the discourse in which knowledge is co-constructed; 2) the significance of the kind of activity in which knowing is embedded and 3) the role of artefacts that mediate knowing (Wells, 1999, p.127).

Mercer and Fisher (1993, in Wells, 1999) view the ZPD characteristic of transfer of responsibility for the task to the student as the major goal of scaffolding in teaching. In order to qualify as scaffolding, they propose, a teaching and learning event should: a) enable the learners to carry out the task which they would not have been able to manage on their own; b) be intended to bring the learner to a state of competence which will enable them eventually to complete such a task on their own; and c) be followed by evidence of the learners having achieved some greater level of independent competence as a result of the scaffolding experience (Wells, 1999, p. 221). The emphasis of their definition is on the collaboration between the teacher and the learner

in constructing knowledge and skill in the former.

Other authors see the metaphor of scaffolding as limited compared to the notion of the ZPD. According to Lave and Wenger (1991, in Daniels, 2001) scaffolding captures teaching performance as a one-way communication process compared to the notion of the ZPD which emphasises teacher-learner collaboration and negotiation. Thus, scaffolding can be seen as a one-way process wherein the scaffolder constructs the scaffold alone and presents it for the use of the novice (Daniels, 2001, p. 59).

Stone (1998) explains that narrowness of the term scaffolding is due to the connotation of the metaphor itself. He provides a critical analysis of the metaphor of scaffolding in its application to the field of learning disability. Stone pointed out the twofold role of metaphor in scholarly understanding of a phenomenon. On the one hand, “a good metaphor... is more than a novel label or a graphic description of a phenomenon. If it has been aptly chosen, a metaphor can help us to appreciate as yet unanticipated connections or consequences. In this latter sense, a metaphor is not so much descriptive as it is generative of new ideas” (Stone, 1998, p. 344). On the other hand, a metaphor can hinder further understanding of the phenomenon, as the metaphor can be misleading in finding its essential characteristics and connections (Stone, 1998).

Analysing a number of limitations of the scaffolding metaphor, Stone referred to a study of Searle (1984, in Stone, 1998) who expressed the concern that too literal an adherence to a scaffolding metaphor, especially in the hands of insensitive teachers, could result in “the imposition of a structure on the student” (Stone, 1998, p. 349). In other words, the metaphor of scaffolding can lead to viewing the adult-child interaction in the classroom as predominantly adult-driven and one-sided in nature. This view of scaffolding, if applied

to classroom teaching, might take educators back to a pre-Piagetian, traditional way of teaching through direct instruction. In such a case, the concern expressed by Ms. Brown, the supervising teacher in our example at the beginning of this paper, can be understood and supported.

A great contribution of Piaget to the theory and practice of education was his view of the child as an active participator in their own development and an active constructor of their own knowledge, as an independent discoverer and explorer, known as cognitive constructivism (Berk, 2002; Krause et al, 2003; McDevitt & Ormrod, 2002). The implication of this is that initiative and self-determination of the child as a learner should not be hindered by educational instruction. Vygotskian theory was built upon the Piagetian idea of the child as an active learner but with the emphasis on the role of social interaction in learning and development. Thus, both Piaget and Vygotsky agreed that individual’s active participation is essential for their successful development. However, Vygotsky emphasised that children and adults are both active agents in the process of child’s development. “Development is, in this case, *co-constructed*.” (Cole & Cole, 2001, p.37). For teaching it means that both the teacher and a student are seen as active agents in children’s learning and it is the interaction between them which is essential. The quality of child-adult interaction is regarded as crucial in assisting children’s learning (Bodrova & Leong, 1996; Fleer, 1992, 1995; Tharp & Gallimore, 1988). The metaphor of scaffolding, however, doesn’t capture the two-way relationship between the teacher and a student, but rather implies a one-sided view of this relationship where a teacher provides a support for the child.

Summarising the limitations of the scaffolding metaphor, Stone (1998) reveals that a number of educational and developmental psychologists are questioning the theoretical

and practical value of the metaphor. However, he concludes, the metaphor should not be abandoned (Stone, 1998, p.351). It is difficult to imagine, however, how the scaffolding metaphor could be abandoned as it has been widely accepted, studied and applied to different learning areas by an increasing number of educational researchers and practitioners (eg Devlin, 2000; Dixon-Krauss, 1996; Donovan & Smolkin, 2002; Doolittle, 1997; Hammond, 2002; Jacobs, 2001; Kong, 2002; Rasmussen, 2001 etc). It is essential to keep in mind, though, that a literal interpretation of the scaffolding metaphor might lead to a narrow view of child-teacher interaction and an image of the child as a passive recipient of a teacher's direct instruction. This falls far behind the Vygotskian idea of the ZPD and the Piagetian view of the child as an active self-explorer. A deeper understanding of the theoretical underpinning of the scaffolding metaphor will promote its creative and informed use by educators.

The Zone of Proximal Development and Its Role in Nurturing Active, Self-Directed Learners

The zone of proximal or potential development was initially elaborated for psychological testing in schools (Vygotsky, 1962). Vygotsky stated that testing should be based not only on the current level of a child's achievements but also (and mainly) on the child's potential development. The actual level of development (level of independent performance) does not sufficiently describe development. Rather, it indicates what is already developed or achieved, it is a yesterday of development. The level of assisted performance indicates what a person can achieve in the near future, what is developing, that is "what is in the zone

of proximal development today will be the actual development tomorrow" (Vygotsky, 1978, p.87). Thus, the zone of proximal development is the distance between what a person can do with and without help. The term proximal (nearby) indicates that the assistance provided goes just slightly beyond the learners current competence complementing and building on their existing abilities (Cole & Cole, 2001).

The notion of the ZPD was not elaborated by Vygotsky in much detail. There "remain a number of questions about how the concept should be understood" (Wells, 1999, p. 314). Paris & Cross (1988, in Miller, 1993) pointed to the metaphorical nature of the term and noted some ambiguities in the concept of the zone of proximal development.

In the last three decades there was a number of significant publications which further developed theoretical understanding of the ZPD in its connection to instruction (e. g., Chaiklin, 2003; Cole, 1996; Dixon-Krauss, 1996; Hedegaard, 1990; Tharp & Gallimore, 1988; Tudge, 1990; Wells, 1999; Wertsch, 1985, 1998).

The concept of the ZPD can be fully understood only in the context and as part of the Vygotskian theory as a whole. "In fact, failure to see the connections between the zone and the theory as a whole means that it is difficult to differentiate Vygotsky's concept from any instructional technique that systematically leads children, with the help of an adult, through a number of steps in the process of learning some set of skills" (Tudge, 1990, p. 156). Furthermore, there is a danger that a failure to understand the complexity of Vygotskian theory as a whole can lead to interpretation of the zone of proximal development as a domination over a child's initiative and active position as a learner. An illustration of this point is a recently published criticism of the Vygotskian notion of the zone of proximal development by Lambert & Claydon (2000). The authors, taking Vygotskian definitions of the ZPD out of the context of its theoretical

assumptions such as social and cultural mediation of psychological development, state, “We feel...that Vygotsky’s ZPD presents a restricted view of learning processes and reduces the learner’s role to one of passivity and dependence upon the adult” (Lambert & Claydon, 2000, p.29).

Vygotsky recognised that the distance between doing something independently and doing it with the help of another, indicated stages of development, which do not necessarily coincide in all people. In this way he regarded an instructor’s “teaching of a student not just as a source of information to be assimilated but as a lever with which the student’s thought, with its structural characteristics, is shifted from level to level”. (Yaroshevsky, 1989, p.283). Viewing the child as an active participant in their own learning is at the heart of the notion of the zone of proximal development. “Within the ZPD the child is not a mere passive recipient of the adult teaching, nor is the adult simply a model of expert, successful behaviour. Instead, the adult-child dyad engages in joint problem-solving activity, where both share knowledge and responsibility for the task” (Wells, 1999, p.140).

Vygotsky stated that consciousness is constructed through a subject’s interactions with the world. Development cannot be separated from its social and cultural context. This led to the idea that we can only understand mental processes if we understand the social interaction and tools and signs that mediate them. Wertsch (1985) believed that it was with this concept of mediation that Vygotsky made his most important and unique contribution to our understandings of children’s development.

Vygotsky emphasised that social interactions are crucial for development from the very beginnings of a child’s life. He asserted that any higher mental function necessarily goes through an external social stage in its development before becoming an internal, truly mental function. Thus, the function is initially social

and the process through which it becomes an internal function is known as internalisation (Vygotsky, 1962). The role of social mediation in human activity has been strongly emphasised by Engestrom (1996). The child’s activity becomes self-regulated when “external behaviours that were defined in part by the culture and internalised by the child can now function as mental tools for her (Dixon-Krauss, 1996, p. 10). To become self-regulated, self-motivated learners children have to develop interest and motivation to learn, which according to Hedegaard (2002) “emanates from the social part of the child’s life. The intentional interaction with adults and their friends can thus be used as a spontaneous factor for creating motivation” (p.67). Central to the concept of mediation is intersubjectivity which is described by Wertsch (1985, 1998) as the establishment of shared understandings between the child and the adult. Intersubjectivity is an essential step in the process of internalisation as the adult gradually removes the assistance and transfers responsibility to the child. Diaz et al. (1990) point out the importance of intersubjectivity in promoting self-regulated development in children.

According to Vygotsky, the most important part of children’s psychological development is acquisition of the culture to which they belong. Everything that is manufactured and created by people in a culture, that is, all cultural products, is labelled an artefact and it is through these artefacts that the culture influences development. Included are all the things we use, from simple things such as a pen, spoon, or table, to the more complex things such as language, traditions, beliefs, arts, or science (Cole, 1997; Vygotsky, 1982). Acquisition of mental tools plays a crucial role in the development of children’s minds. “The role of the teacher is to “arm children” with these tools...It involves enabling the child to use tools independently and creatively.” (Bodrova & Leong, 1996, p.3). Children acquire

cultural tools in social interactions with more experienced members of the society. Moving from shared possession of tools (interpersonal) to individual possession (intrapersonal) is associated with gaining independence and a shift in the development of the child.

Thus, to understand the complexity of teaching in the ZPD, it is necessary to take into account such concepts as cultural and social mediation of learning, intersubjectivity, internalisation and the active position of the child. When we talk about teaching in the zone of proximal development, we look at the way that a child's performance is mediated socially, that is, the quality of adult-child interaction. This includes the means by which the educator meets the level of the child's understanding and leads the child to a higher, culturally mediated level of development. This connects to the idea of tool mediation, that is, to a consideration of what mental tools have been provided for the child to appropriate and use on their own in their independent performance. It also includes a consideration of the conditions that have been created for the tools to be internalised. In other words, what techniques have been used to ensure the transformation of assisted performance into independent performance.

In the example described in the introduction, Ann was scaffolding children's reading by asking a question, 'Do you think the Duck will come back?' For her, such scaffolding was justified in Vygotsky's view of the teacher as leader and facilitator of students' learning. But was Ann working in the children's zone of proximal development? The technique of questioning that Ann used enables the teacher to provide indirect instruction which echoes the teaching in the ZPD (Tharp & Gallimore, 1988). However, was the technique, that Ann used, stimulating for the development of children's independent reading? Or was it rather an imposition of her view on the children? Has shared understanding or intersubjectiv-

ity between the child and the teacher been established before the scaffolding occurred? Did Ann consider the children's initial understanding of the story before asking leading questions? Perhaps not.

By asking a question about the future events in the story, Ann modelled the technique of *prediction* which is important for children's development as independent readers (Brown & Palinscar, 1988, in Cole & Cole, 2001). However, to acquire (internalise) this technique as a tool for their independent reading, children need to be actively involved in the dialogue with the teacher. Putting the question in a more generic way, for example, "What do you think will happen next?" or "What is the Duck going to do?" would have stimulated the children's active response and engaged their creativity. The more specific question that Ann asked could have limited the children's independent thinking. She could have asked it later on, in order to extend the dimension of the children's understanding of the story (if they didn't come to it independently) but not at the start of her scaffolding.

Understanding Scaffolding

The interpretation of scaffolding in current educational practice and research is exceedingly diverse and appears to become an umbrella term for any kind of teacher support (Jacobs, 2001). Consequently, it loses the richness of the original meaning implied by socio-cultural theories. Furthermore, when taken out of its theoretical context, scaffolding tends to be interpreted as a variety of direct instruction, which invalidates the Vygotskian idea of teaching as co-construction of knowledge within student-centred activities. Such a view of scaffolding is an unfortunate step back to a traditional, pre-Piagetian way of teaching which is adult-driven in nature and often results in "the imposition of a structure on the student" (Stone, 1998, p. 349).

As pointed out by Stone (1998), Vygotsky never used the metaphor of scaffolding in his work (as it would not have made sense to a Russian-speaking person). It is no surprise that the interpretation and operationalisation of the scaffolding metaphor in educational research is highly diverse and “is sometimes used loosely to refer to rather different things” (Hammond, 2002, p.2). Scaffolding has been interpreted in a wide sense as “a form of support for the development and learning of children and young people” (Rasmussen, 2001, p.570). The term can be used as an umbrella metaphor to describe the way that “teachers or peers supply students with the tools they need in order to learn” (Jacobs, 2001, p.125). The framework of systematic theory, in conjunction with a number of other educational theories (Jacobs, 2001; Rasmussen, 2001) enriches the context of implementation of the scaffolding metaphor but makes it more generic. Hammond and her colleagues (2002) argue that extended understanding of scaffolding in language and literacy education is needed. They point out the crucial role of language in scaffolding.

A more specific study of scaffolding is presented by Donovan and Smolkin (2002). They take a critical look at the issue of scaffolding in children’s writing. They research the role of different levels of scaffolding in children’s understanding and demonstration of their knowledge of genre. Tasks range from those that provide minimal or low level support to those that provide middle or high levels of support (contextual and visual support). Interestingly, the highest level in their classification of scaffolding is described as a “direct instruction with revision” (Donovan & Smolkin, 2002, p.435). Their research revealed that while scaffolding can assist children it may also, at times, hinder children in demonstrating their full range of genre knowledge (Donovan & Smolkin, 2002, p.428). In particular, scaffolding at its “highest” level, when maximum assistance was provided, proved to be hindering

for children’s learning. This finding confirms our concern that scaffolding, when understood as direct instruction, might become counter-productive. The ways that the essential characteristics of optimal scaffolding are defined need to be further analysed. For instance, can the highest levels of scaffolding be defined as direct instruction?

There is a variety of definitions of scaffolding presented in the texts for pre-service educators (e.g., Berk, 2002; Eggen & Kauchak, 1999; McDevitt & Ormrod, 2002; Krause et al., 2003). For example, Laura Berk defines scaffolding as “A changing quality of support over a teaching session in which adults adjust the assistance they provide to fit the child’s current level of performance. Direct instruction is offered when a task is new; less help if provided as competence increases”. (Berk, 2000, p. 261). This definition indicates that direct instruction is at the top level of scaffolding. Some other texts focus on the techniques of scaffolding as various forms of adult support: demonstration; dividing a task into simpler steps; providing guidelines; keeping attention focused (McDevitt & Ormrod, 2002) as well as providing examples and questioning (Eggen & Kauchak, 1999). Breaking content into manageable pieces seems to be a common feature of scaffolding that has been emphasised in the texts (Berk, 2002; Eggen & Kauchak, 1999; McDevitt & Ormrod, 2002; Krause et al., 2003).

Conclusion

This paper presented an analysis of the metaphor of scaffolding in its connection to the theory of Vygotsky, and the zone of proximal development in particular, as its theoretical basis. In spite of the obvious limitations of the metaphor compared to the notion of the ZPD, the notion of scaffolding remains increasingly popular among educators – researchers and practitioners. The term appears in the most

modern educational psychology textbooks for pre-service teachers which cover the theory of Vygotsky. The scaffolding metaphor provides educators with an easy to grasp justification of the quality of teacher intervention in children's learning. However, it can become a hindrance rather than a help for children's development depending if taken out of its theoretical context. In particular, if scaffolding is understood as direct instruction, it can become a hindrance for children's development as active, self-directed learners.

Recently published Australian Government documents on quality teaching and productive pedagogies, largely inspired by socio-cultural theories of teaching and learning, emphasise the importance of nurturing children as self-directed, life-long learners (Productive Pedagogies, 2001). Self-directed learning is a significant part of the development of students' positive attitudes towards life-long learning, which the Commonwealth Government Quality Teacher Initiative (2000) views as a key element of recognition of quality teaching.

The quality of teacher intervention in education has been largely associated with scaffolding. Over the past two decades, an increasing number of educators and researchers have used the concept of scaffolding as a metaphor to describe and explain the role of adults or more knowledgeable peers in guiding children's learning and development (Hammond, 2002; Krause, Bochner & Duchesne, 2003; Daniels, 2001). The metaphor remains increasingly popular among in-service and pre-service teachers and early childhood educators. Indeed, the metaphor of scaffolding, based in socio-cultural theories and widely accepted by educators, can be an effective tool in meeting the Australian Government agendas of nurturing children as self-directed, life-long learners. However, there is a need for a better, critical understanding of the nature of scaffolding based on a broader awareness of its theoretical underpinnings. A deeper under-

standing of the theoretical underpinning of the scaffolding metaphor will promote its creative and informed use by educators.

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