

# Textbooks and Constructivist Pedagogy in Saudi Arabian School Classrooms

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## Abstract

Constructivist *theories* of teaching and learning have continued to grow in popularity among educational policy makers, but it is far less certain whether constructivist teaching *practices* have found their way into most classrooms. Textbooks, arguably the most important non-personnel instructional resource in classrooms, heavily influence what teachers teach and how, but how much textbooks support constructivist pedagogy in particular is unclear. The purpose of this study is to assess constructivist practices in classrooms by exploring the opinions of Saudi Arabian teachers about the degree to which their textbooks adopt and support principles of social constructivism and the degree to which these principles vary by subject matter specialization. We gather information on 31 *characteristics of textbooks* identified as “constructivist” from 231 intermediate grade teachers across multiple subject areas in Riyadh. Teachers’ responses to items framed on a Likert scale were frequency analyzed, and degrees of difference associated with teacher subject matter background were tested using one-way analysis of variance. Results indicated that (1) textbooks only minimally support constructivist pedagogical practices and (2) textbook emphases on constructivist pedagogical practices do not vary significantly by subject matter area. Despite extensive policy support to the contrary, Saudi Arabian textbooks foster at best only very modest levels of constructivist practices in classrooms. This effect was consistent across different subject matter fields. Implications for educational policy makers and for future research are discussed.

**Keywords:** *curriculum; textbooks; constructivism*

## 1. Introduction

### 1.1. Background

Teaching policies and practices grow fundamentally, if imperfectly, from teachers’ theories of learning. Learning theory is a set of related principles that explain and predict how learning takes place through identifying the conditions within which learning usually occurs. The role of teaching is to employ this theory to create a climate that facilitates effective learning (Driscoll, 2004). Over time, different theories of learning have provided the basis and rationale for policies and “best practices” of good teaching. Some of the more recent and widely recognized theories have evolved from roots in psychology such as behaviorism (Prichard, 2005; Driscoll, 2004) and from a blend of psychology and neuro-science such as cognition (Schunk, 2004). More recently, educators have incorporated other, more fundamental theories of learning into “constructivism”, a theory that places relatively heavy emphasis on how learners learn, and therefore, how they can best be “taught”. Developed as a theory of learning over the last two decades of the 20<sup>th</sup> century, constructivism has received increasing acceptance among educators across grade levels (Fink, 2003; Fink, 1995; Wright, 2008; Su, 2007) and subject matter fields (Simon, 1995; Scott et al, 1992; Alharbi, 2004; Blyth, 1997; Chen, 2002). In contrast to the implied emphasis of more traditional learning theories which view learning mainly as a process of transferring knowledge to the learner and reinforcing that transfer, constructivism views learning as a process of active building and developing knowledge and meaning by the learner. According to constructivism, knowledge is not acquired by learning from teachers, but mainly by means of making (constructing)

meaning by the learner.

Underneath this simplifying generalization about teachers and learners, constructivism emanates from at least two differing theoretical roots: cognitive constructivism, based on the ideas of mental structures and development proposed by Piaget (Phillips & Soltis, 1998), and social constructivism, guided by the ideas of Vygotsky which emphasize social influences on learning and thinking (Vygotsky, 1978). Social constructivism suggests that learning occurs more effectively when the learner works collaboratively with more knowledgeable and experienced people. Learning, thinking and development are all socially mediated. Social constructivism emphasizes the role of social forces in the process of meaning making. Piaget, on the other hand, believed that biological maturity had to occur before certain types of learning could take place (Phillips & Soltis, 1998). One had to go through consecutive developmental stages in order to learn certain facts or skills. Vygotsky took another view, arguing that the learning process precedes the developmental process and affects it (Vygotsky, 1962). The social constructivist approach of learning emphasizes the learner's ability to be an active constructor of knowledge within a community of learners (Vygotsky, 1962). Effective pedagogy creates learning processes that lead to development (Ornstien & Hunkins, 2009). The difference between these two historical roots of constructivism may be more one of degree than of kind (Richardson, 2003).

Educators have been drawn to the basic tenets of constructivism, especially its social ones, and have increasingly relied on them to argue for rethinking and reformulating virtually all elements of the teaching-learning process (Moore, 2005). As a consequence, a great many educators argue that teaching (and teachers) should focus on learning objectives and activities which occur between what a student can do without help and what he or she can do with help, Vygotsky's widely quoted "zone of proximal development" (Doherty et al., 2002). The learner is viewed as an active learner who constructs knowledge and meanings and not a passive receiver of transferred knowledge.

The constructivist view in modern cognitive psychology has emphasized the active role learners take in learning, and the social construction of knowledge has become not only an important principle in socio-cultural theory (Vygotsky 1978, Wertsch 1985), but it has also provided the rationale for educators intuitively to adopt an array of "constructivist" teaching theories (Brooks & Brooks, 2001; Bevevino et al, 1999; Fosnot, 1996), practices (Wright, 2008; Hannafin et al, 1997), and individual lessons (Milner, 2008). In general, these constructivist learning activities have been designed to encourage learners to use their own experiences to actively construct meaning that makes sense to them rather than to acquire understanding through exposure to a format organized by the teacher (Gale & Steffe, 1995, cited in Borich, 2000).

### *1.2 From a Theory of Learning to a Theory of Pedagogy*

Efforts to apply social constructivist theories of learning to classroom practices have been underway over a relatively short span of time, roughly the last few decades (Richardson, 2000), and studies in this field are relatively few in number (Schunk, 2004). So, even with little overt criticism and negative reaction to the concepts, it is not surprising to find something less than total, coherent adoption of constructivist practices in schools. "Not all teachers may be aware of the concept of social constructivism, but it has had a great influence on approaches to learning in primary and secondary schools at the end of the twentieth century" (Dewitt, 1999, p.2). Since constructivism is a theory of learning and not teaching, the elements of social constructivist teaching have not been fully and distinctively identified (Richardson, 2003). Windschitl (2002) and others (Good & Brophy, 2000) have argued that while social constructivist theory has important implications for effective teaching, it has yet to be developed to be a model of effective teaching. Constructivists face the challenge of applying this theory of learning to instructional practices (Gagnon and Collay, 2001). A problematic circumstance arises in which theorists have not fully articulated the "constructivist conditions of instructional practice", while at the same time, many practitioners have "grabbed the (intuitively appealing constructivist) ball and run with it." Constructivism continues to be prominent and captivating as an important learning theory and as a pretext and justification for changes in instructional practice in educational settings (Sullivan, 2007).

Beginning in the 1990s research on teaching began to report classroom teaching practices identified as constructivist (Richardson, 2003). Much of this research was conducted within specific subject matter areas, where teachers and researchers focused on individual classrooms and small groups of students, including the fields of math (Simon, 1995; Pirie & Kieren, 1992; and Kroesbergen et al., 2004), science (Rezaei & Katz, 2002), special education (Grobecker, 1996), grammar (Blyth, 1997), computers (Scott et al., 1992), physical education (Chen, 2002), and reading (Fink, 1995). Collectively these studies represent a period of experimentation, where attempts to translate the theory of learning into a theory of teaching were tried out and studied. At the same time, much of this research varied considerably in design, and there is little that can be generalized about the impact of constructivism both *within* and

*across* different subject matter areas.

While relatively little has been reported on the characteristics of a social constructivist curriculum, several studies extensively examined the main features of the constructivist learning and the characteristics of teaching techniques based on them (Hannafin et al, 1997; Anthony, 1996; Bevevino et al, 1999). Most of these studies examine issues associated with the instructional implications of constructivism, but none to our knowledge has examined the role of the textbook in constructivist pedagogy. Basic questions remain about the degree to which school texts foster, impede, or even misdirect instruction based on social constructivist learning theories. Despite this gap in the research, a variety of teaching techniques have come to be identified as constructivist (Gagnon & Collay, 2001; Kelly, 2009; Windschitl, 2002; Woolley et al, 2004), all based in large part on deductions from the theory.

Despite variations in emphasis, broad consensus exists about the basic tenets of the theory. The social constructivist model of teaching requires educators to develop a learning environment that provides diverse opportunities for students to be actively engaged with learning experiences, to use and apply their previously gained knowledge and skills, and to allow for multiple representations of concepts and use of learning communities. Although the activities and format of the social constructivist classrooms can vary considerably, taxonomies of those activities have much in common with each other. Milner (2008), for example, lists four basic principles that characterize the Vygotskian (social constructivist) classrooms: (1) learning and development are social, collaborative processes; (2) the difference between what a learner can do without help and what he or she can do with help (Vygotsky's "zone of proximal development") can serve as a guide for curricular and lesson planning; (3) school learning should occur in a meaningful context and not be separated from the learning and knowledge that children develop in the "real world"; and (4) out-of-school experience should be related to the school experiences. Milner's principles do not differ substantially from other, earlier taxonomies of constructivist learning, such as Wray and Lewis's (1997) four aspects for the constructivist learning: (1) learning is an interaction between what is known and what is to be learned; (2) learning is a social process; (3) learning is a situated process; and (4) learning is meta-cognitive process.

Other frameworks place somewhat greater emphasis on student control of his or her learning. Freiberg & Driscoll (2000), for example, argue that constructivism employs three essential dimensions: appreciating the student's point of view, using questions that target higher order thinking, and appreciating the students' cognition rather than focusing on answers and products. Richardson (2003) summarizes the characteristics of social constructivist pedagogy as follows: (1) attention and respect for the students' background and developing understandings of the beliefs about the elements of the domain, (2) facilitation of group dialogues that explore an element of the domain with the purpose of creating shared understanding of a topics, (3) planned and often unplanned introduction of formal domain knowledge into the conversation through different authentic teaching strategies, (4) provision of opportunities for students to determine, challenge, and develop existing beliefs and understandings through engagement in tasks that are structured for this purpose, and (5) development of students' meta-cognition skills. All of these frameworks, despite minor variations, include greatly increased student (especially social) engagement in their own learning while reaffirming the primacy of instructional goals.

While the theory of constructivist learning is largely coherent, the elements of social constructivist pedagogy have not yet been presented as a comprehensive set of specific practices (Richardson, 2003). Individual features, however, are surfacing. Schunk (2004), for example, identifies four: (1) the teacher is not always the center of teaching; (2) there are variety of instructional forms that includes small groups, peer collaboration, reciprocal teaching, scaffolding, and apprenticeship, where students are expected to take the responsibility of their learning; (3) teachers use authentic learning activities rather than formal activities; and (4) the teaching environment provides different representation for the content, such as reading books, exploring the Internet, discussions, and drawing. Posner (2004) identifies a somewhat different set of four features of a constructivist curriculum, in which it: (1) treats topics in great depth, (2) teaches concepts and skills only in the context of the students' background, experience and knowledge, (3) relies on intrinsic motivation, and (4) prefers clinical interviews and observations to standardized test for evaluation (p. 204). He adds that the most significant feature of a constructivist curriculum is its emphasis on tasks that require students to think and to make sense of phenomena. Generally reinforcing earlier perspectives, Freiberg and Driscoll (2000) argue that constructivism in the classroom incorporates three important dimensions: (1) valuing student's point of view, (2) using higher-level questions to elicit student thoughts, and (3) valuing the process of the student thinking rather than student answer or product.

Despite the differing emphases and different taxonomic categories portrayed above, there is substantial agreement about the parameters of constructivist learning theory that should frame constructivist pedagogy. The constructivist curriculum aims at engaging the students in real life activities and developing their higher order thinking instead of

providing them with scattered pieces of information to memorize. Several curricula have been developed in the US based on constructivist theory (Terwel, 1999), and the results of these programs seems promising in that they led to increased growth in knowledge, a higher degree of critical thinking, and greater reading and writing skills, as well as improved skills in argumentation. Whether these individual initiatives represent general trends or isolated instances is unclear.

### *1.3 Problems with Successfully Implementing Constructivist Pedagogy in Schools*

Despite the growing recognition of the value of the theory and reports of specific applications, overall progress on successfully applying constructivist theory to schooling is mixed. At about the same time that research was reported on initial attempts to implement constructivist pedagogy in classrooms, concerns emerged about problems associated with these attempts. Airasian and Walsh (1997) identified several faulty assumptions made by teachers who seek to implement constructivist practices in their classrooms, including: thinking that constructivism is merely a behavioral technique, that it is less demanding of teachers, that it passes responsibility for student learning from teachers on to students, and that “anything goes” constructivism is the opposite of “one-right answer” reductionism. Although not as specific in his critique, Prawat (1992) also traces problems with implementing constructivist practices to the perspectives and mindsets of teachers. Even more generally, several researchers have asserted that, at a minimum, social constructivist-based principles of instruction have not cohered into any clear, widely applicable models for teachers (Fosnot, 1996; Noddings, 1990). Cobb, Yackel, and Wood (1988) have warned that, although constructivist theory is attractive for teachers, applying it is not an easy task. Windschitl (2002) argues that this difficulty arises not only because constructivism is a theory of learning rather than of teaching, but also because the implied view of instruction breaks radically from the traditional educational model that teachers themselves were taught.

Widespread tacit acceptance of *previous* theories of teaching and learning contribute to the difficulty of implementing constructivist pedagogical practices. Perhaps the most compelling example of this involves behaviorist theories of teaching and learning. Whereas behaviorists assume that the major task facing the teacher is stimulating students through clear communication, along with guided practice and feedback opportunities, constructivists assume that making students' existing conceptions explicit and challenging them are the major tasks facing the teacher (Posner, 2004, p. 116). The social constructivist lesson is designed and planned so that it encourages learners to use their experiences to actively build meaningful conceptions, rather than acquiring conceptions through exposing them to forms developed by the teacher (Gale & Steffe, 1995). Social constructivism emphasizes the teaching activities that provide an ongoing dialogue or a discussion where participants explore the issue deeply and exchange the views and meanings (Good and Brophy, 2000, p. 421).

Contrary to a behavioral theory based curriculum, which emphasizes achieving a set of behavioral objectives, constructivist teaching focuses its attention on helping students to think more effectively and to make sense of the information and the world around them (Posner, 2004, p. 118). Constructivist teaching should encourage students to pose questions, identifying problems and setting goals for learning (McNeil, 2006, p. 129), and that is difficult work.

## **2. The Research Problem**

While educators are in substantial agreement about the importance of developing curriculum according to constructivist principles of learning, they have not fully succeeded in implementing constructivist practices in classrooms. Criticisms of social constructivism focus largely on problems of implementation in the classroom, not on the theory. The vast majority of reported scholarship on constructivist practices has either sought to argue its importance in schools or, more frequently, to attempt to apply constructivist principles in concrete instances, ranging across all grades and virtually all subjects, including math, science, language arts, art, technology, and teacher development.

Yet, scholarly publications about constructivist applications in schools do not, in themselves, suggest that those ideas actually reach schools beyond those few classrooms actually studied. School textbooks, on the other hand, do represent a vehicle through which principles of constructivist pedagogy may well be expected to reach and influence teachers and students, and even to impact teaching and learning. Textbooks, usually the products of central educational policymakers, are a principal vehicle through which educational content and methods are made available to teachers and students (Su, 2007; Mesa, 2004). It follows then, that through their lesson plans, assignments, teacher guides, and their treatment of content, textbooks can provide a consequential mechanism for fostering the growth and development of constructivist pedagogical practices. How and to what degree do school textbooks communicate

constructivist concepts? The textbooks of one country, the Kingdom of Saudi Arabia, are considered here. School textbooks in Saudi Arabia are developed centrally in the Ministry of Education for use in all schools

Ministry officials officially endeavor to incorporate constructivist principles of pedagogy in the nation's classrooms and imply, both in general policies and specific standards, that they incorporate constructivist instructional practices within their textbooks (Ministry of Education, 1995; Ministry of Education 2004; Salamah et al, 2008). Ministry intent at the policy level, for example, is illustrated in the following goal-related passages (Ministry of Education 1995):

- (for all students) "Encouraging and developing the spirit of scientific discovery and thinking, and enhancing (strengthening) the ability to observe and reflect..." (p. 11)
- (for students in intermediate grades, the subject of our study) "Motivating the student to search for knowledge and enabling him (her) to reflect about practice and scientific investigation". (p. 18)

More concrete illustrations are reflected in the standards developed for teachers by the Ministry of Education (Salamah et al, 2008) which state that:

- "Teachers should apply diverse teaching methods and techniques in order to develop students' different thinking skills, such as critical thinking, problem solving, creativity, and concept building." (page 39)
- "The teacher should encourage students to inquire in order to discover knowledge by and for themselves". (page 39)
- "The teacher should apply collaborative teaching methods that teach students needed social skills." (p. 39)
- "The teacher should relate lessons to social issues and incidents that students experience." (p. 37)
- "Teachers should engage students in discussing these issues and incidents, and analyzing them in a way that suits their abilities." (p. 37)

All teachers are expected to teach from the textbooks and finish them by the end of the school year. Saudi Arabian textbooks are intended to support constructivist pedagogy, and teachers rely on their textbooks for teaching. However, since some studies have indicated that teachers do not employ constructivist practices, we wanted to explore the degree to which textbooks help (or hinder) teachers from doing that.

Little is known about this issue, but what we do know suggests little constructivist impact. Alharbi (2004), for example, indicated that the Saudi teachers' use of constructivist ideas in their (science) classroom teaching is low. His study of 72 science teachers' response to a 17-item instrument revealed minimal use of constructivist practices in classrooms. In order for constructivist views to be employed in schools, textbooks should reflect them and, at the same time, teachers need to be able to recognize those views, believe that those views are valid and useful in their work, and have some facility in implementing those views in their teaching. Therefore, in order to ascertain the impact of constructivist teaching (and learning) in Saudi schools, it is important to explore the extent to which the textbooks of the Saudi school curriculum adopt and support the constructivist view of learning, especially as perceived by teachers. The general research question this study seeks to answer, then, is: In the judgment of Saudi teachers to what extent do their textbooks support the principles of the constructivist pedagogy? We investigate the opinions of teachers regarding the degree to which the textbooks from which they teach incorporate principles of social constructivism. This study aims to answer two, more specific questions. (1) To what extent do teachers believe that the textbooks in intermediate schools in Saudi Arabia adopt the principles of constructivism? (2) Are there any significant differences in responses among teachers based on the subjects they teach?

### 3. Method

Teachers were asked to rate the degree to which their textbooks embodied 31 discrete practices that were defined here as "constructivist", but which did not need not be recognized as such by teachers. The study surveyed 231 intermediate level school teachers, randomly selected from among the 5,704 intermediate school teachers in Riyadh. The 231 respondents constituted 66% of the 350 of teachers whose responses were requested. This group of 231 constitutes approximately four percent of all intermediate school teachers in Riyadh, on average somewhat less than one teacher for each of the 375 intermediate schools. Our focus on intermediate level schools enabled us to examine subject-matter-specific reactions to textbooks while at the same time addressing teachers of relatively young children. Almost half of the teachers taught either Arabic or Religion, and the other half taught science, math, social studies, and English in roughly equal proportions (Table 1).

**Table 1.** Subject Matter Concentrations of Teachers

Subject	N	%
Arabic	57	24.7
Religion	54	23.4
Science	32	13.9
Math	29	12.6
Social Studies	23	10.0
English	27	11.7
Not defined	9	3.9
	231	100.0

Based on a review of extant literature, we identified dozens of separate pedagogical practices, emphases, and principles for inclusion in the instrument, all framed as characteristics of the textbooks that teachers use in class. These characteristics were selected based on their “constructivist” implications, but they were not labeled “constructivist”. This was done so that respondents did not have to be familiar with constructivist theory, *per se*, in order to provide their opinions about the instructional practices promoted in their textbooks. Preliminary versions of the questionnaire were reviewed by curriculum experts in the Department of Curriculum and Instruction at King Saud University and, separately, by several supervisors in the Ministry of Education, and changes were made to the instrument based on this feedback. The resulting 31 constructivist practices and activities are portrayed in Table 2 (below). Individual textbook characteristics ranged from those which addressed general themes, e.g., meaningful context for learning (item 12), to those dealing with student assignments, e.g., open-ended questions (item 16), to those dealing with explicitly student roles, e.g., values student’s point of view (item 18), to those which address the organization and content of the curriculum itself, e.g., presenting content in different forms (item 8). Although most questions were closely associated with other questions, every effort was made to make each question distinctive.

**Table 2.** Constructivist Emphases in School Textbooks

1. Textbook activities do not always make the teacher the focus of teaching
2. Activities vary to include cooperative learning
3. The textbook provides the student with activities that lead to interacting with and learn from their peers
4. The textbook offers authentic learning activities
5. New learning is built on previous learning
6. Dialogue activities exist
7. Scaffolding activities exist
8. The text book gives students the opportunity to manage their learning
9. The text book presents the content in different forms, e.g. reading a book, searching the Internet, discussing the topic, drawing a picture
10. The textbook helps in making links between previous and current learning evident to the student
11. The textbook provides social interactive discussion with and without the teacher
12. The textbook provides a meaningful context for learning
13. The textbook helps in developing the learners' awareness of their meta-cognition
14. The textbook encourages learners to use their experiences to actively interpret their relative meanings.
15. The textbook helps in making the learner an active learner.
16. The textbook focuses on open-ended questions.
17. The textbook focuses on questions with multiple, different answers
18. The textbook values the student’s point of view.
19. The textbook uses questions to target higher order thinking.
20. The textbook values students' thinking rather than focusing on answers.
21. The textbook focuses on developing the students meta-cognitive skills.

22. The textbook creates an environment rich with experiences that increase students learning chances as active participants.
23. The textbook focuses on and deals carefully with students' previous knowledge and objectives and targets them.
24. The textbook offers learning contexts that create social interactions.
25. When used in conjunction with computers, the textbook concentrates on interactive and collaborative software applications.
26. The textbook provides collective activities for students.
27. The textbook is concerned with multiple intelligences among students, and deals carefully with the development of all available abilities.
28. The textbook provides learning situations that guarantee keeping students engaged in leaning activities.
29. The textbook provides activities that allow students to pose questions.
30. The textbook deliberately seeks to link topics among courses.
31. The textbook is more concerned with general themes in the subject than information.

The reliability of the instrument was sufficiently high (85 respondents). We also sought to ascertain internal consistency, i.e., whether several items that are supposed to measure the same general construct in fact produce similar scores. Based on Cronbach's alpha (0.95), internal consistency of the items appeared to be quite high.

For each emphasis listed in Table 2, teachers were asked to decide the degree to which they agree that it exists in the textbooks from which they teach. They were provided a 5-point Likert-type scale (5 = strongly agree, 4 = agree, 3 = do not have a strong opinion, 2 = disagree, and 1 = strongly disagree) for their responses. In order to determine if teachers differed in their responses as a result of different subject matter backgrounds, we performed a one-way analysis of variance test of teacher subject matter background against the 31 item responses. Questionnaires were administered to a random sample of teachers in Riyadh middle schools by members of the study team, all of whom did not know or work with the sample of teachers. Standard procedures were employed to ensure that all members of the sample were fully informed of the study procedures prior to the administration of the instrument and freely consented to participate. Identities of the sample were fully protected. Completed instruments were randomly coded and then destroyed.

#### 4. Results

Generally, teachers do not have a strong opinion (positive or negative) about the degree to which their textbooks support constructivist pedagogy. As portrayed in Table 3, across the 31 characteristics of textbooks, teachers' opinions were on average only modestly positive (3.28 on a scale of 5). None of the characteristics were rated as high as "agree" on average, including the characteristic which garnered the highest rating (3.88), "New learning is built on previous learning." This particular characteristic is worth special note for several reasons. First, at one level this characteristic is arguably true of *all* textbooks in the sense that curriculum is organized "sequentially". This item does relatively little to distinguish constructivist-oriented from non-constructivist oriented textbooks. Second, response to this item is an "outlier" in that it is nearly three tenths of a point higher than the second most agreed-upon response, i.e., over three times the interval between any other two characteristics. All of the other responses were much closer to the mean. As a group, the teachers in our sample do not evidence strong opinions – positive or negative – about the degree to which their textbooks are characterized as "constructivist".

**Table 3.** Teacher's Perceptions of Textbooks – Rank Ordered from Most to Least Agree with the Statement

	M	SD
5. New learning is built on previous learning	3.88	0.93
2. Activities vary to include cooperative learning	3.49	1.02
23. Concerned with students previous knowledge and objectives and targets them	3.48	1.05
29. Provides activities that allow students to pose questions	3.44	1.08
7. Scaffolding activities exist	3.43	1.03
3. The book provide the student with activities that lead to interacting with and learn from their peers	3.43	1.07

14. Encourage learners to use their experiences to actively the (meaningful) relative meanings	3.40	0.94
4. The book offers authentic learning activities	3.39	1.07
15. The book helps in making learner an active learner	3.38	1.01
6. Dialogue activities exist	3.38	1.15
12. Create (provide) a meaningful context for learning	3.37	1.04
10. Helps in making links between previous and current learning clear (evident) to the student	3.35	1.03
30. Concerned with (take care of) liking topics among courses	3.34	1.09
13. Helps in developing the learners' awareness of their meta-cognition	3.33	1.00
1. Text book activities do not always make the teacher the focus of teaching	3.33	1.13
19. Use questions that target higher order thinking	3.31	1.12
17. Focuses on questions with multiple/ different answers	3.27	1.06
26. Provide collective activities for students	3.27	1.17
28. Provide learning situations that guarantee keeping students engaged in leaning activities	3.23	1.02
22. The book create an environment rich with experiences that increase students learning chances as active participants	3.22	1.06
20. Value the students' thinking rather than focusing on answers	3.20	1.16
25. When using computer, concentrates on interactive and collaborative software	3.18	1.12
24. Offer learning context that create social interactions	3.13	1.06
31. Concerned with general themes in the subject more than information	3.13	1.07
21. Focuses on developing the students meta-cognitive skills	3.09	1.08
27. The book is concerned with multiple intelligences among students, and support all available abilities and develop it	3.08	1.06
16. Focuses on open-ended questions	3.07	1.03
9. The book present the content in different forms, e.g. reading a book, searching Internet, discussing the topic, drawing, etc.	3.05	1.21
8. The book let students (give them the opportunity to) mange their learning	3.04	1.10
18. Value the student's point of view	2.99	1.10
11. Provide social interactive discussion with and without the teacher	2.93	1.10
Mean	3.28	

Is it possible, however, that the data are masking significant differences among subgroups of teachers, specifically those teaching different subjects with fundamentally different content in their textbooks. Are the responses of teachers by subject matter different from those associated with those from all teachers? The answer from these data, however, is “no”, at a  $>.05$  (0.78) level of significance.

Looking beyond mean responses of the individual items, we sought to inductively identify any possible “clustering” among those textbook characteristics that were *relatively* widely acknowledged to be in textbooks as compared to those that were not. In doing that, we compared the five characteristics that teachers agreed on most with the five characteristics that they agreed on least (Table 4).

**Table 4.** Comparing Most and Least Agreed Upon Textbook Characteristics

Textbook Characteristics <u>Most</u> Agreed Upon
Build the new learning on prior knowledge
Activities vary and they include cooperative learning
Consider the learner's previous learning and learning objectives
Provides activities that allow students to ask questions
Includes tasks for scaffolding students' learning



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### Textbook Characteristics *Least* Agreed Upon

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Offer a multiple-size group social interaction with and without the teacher

The textbook appreciates the student's point of view

Allow students to manage their learning process

Present content in different forms such as readings, searching internet, drawing, and discussions.

Emphasizes open-ended questions

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Based on our subjective analysis of this table, it appears that the activities most offered by textbooks, according to teachers, are ones that somewhat less distinctively characterize constructivist theories of learning. They address “age-“ and “grade-appropriate” content and encourage students to work together and ask questions. Arguably, these characteristics could also be present in textbooks that were “behaviorist” as well as constructivist. The five characteristics which teachers found *least* in evidence, on the other hand, were difficult to categorize as other than constructivist. Together they more tangibly speak to the importance of the student perspectives in learning, both in content and in form. The distinction between behaviorist and constructivist is somewhat clearer with these five characteristics. Saudi textbooks may, thus, be even less overtly constructivist than was suggested by the mean responses to all 31 characteristics.

## 5. Conclusions and recommendations

While the inherent value of constructivist pedagogy is widely recognized among many educators and educational policy makers, the textbooks that teachers use in their classrooms may not emphasize constructivist theories of pedagogy. There are several approaches that textbooks could employ to do this, e.g., through the nature of student assignments, the organization and sequencing of the curriculum, guidelines for teachers, and assessment strategies. None of these appears to have been communicated to the teachers through the textbooks they use. Furthermore, this lack of effect is consistent across subject matter specializations. Religion and language appear to be no different from math and science. Regardless of whether some subjects are (or should be) more amenable to constructivist pedagogical practices, it appears that textbooks have no discernable differences in constructivist emphasis, *regardless* of their subject matter. According to teachers across the range of intermediate school subject matter, textbooks in Saudi intermediate schools do not provide activities that are based on the social constructivist view of learning.

It may follow then that current versions of textbooks cannot be expected to help in creating a constructivist climate of teaching. At the same time, this situation may present an opportunity for developers of future editions of textbooks to enhance their emphasis on constructivist pedagogical practices in order to help capture more of the benefits that have been attributed to constructivist theories of learning and of teaching. Minimally, a more in depth analysis for these textbooks and of their use by teachers could provide further insights into textbook enhancements that would help to improve the effectiveness of the teachers who use them. If today’s textbooks do not appear to affect teachers’ constructivist teaching practices, are there other teaching practices that these textbooks *do* influence, intentionally or not?

The process of school textbook *production* provides a related field for fruitful inquiry, specifically examining linkages between those who have intimate knowledge of what should be taught in schools and those who design, develop, and produce textbooks. To what extent do those who produce textbooks reflect the curricular and pedagogical priorities of educational policy makers, including those associated with constructivist pedagogical practices? Do developers of subject-specific texts require more expertise in constructivist pedagogy to complement their expertise in the subject matter?

These questions should not suggest that constructivist pedagogical principles should overwhelm all other considerations and objectives in school textbooks. All teaching practices described as “constructivist” are not equally employed or equally effective in schools, and, more fundamentally, “constructivism” as a framework for guiding teaching practice is perhaps necessary, but by itself not sufficient for improving levels of student performance in schools. Finally, it is difficult to employ these practices successfully, and the school textbook cannot be expected to be the “silver bullet” for addressing all issues of professional development of teachers. We do suggest, however, that the textbook has the potential to generate greater positive learning outcomes than is the case presently and, based at least on our data, that potential may not be fully utilized at present.

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