Self-regulation and global development among a group of Iranian college preppies: a question of changing methodology in education

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Abstract: Self-regulation is one of the major cornerstones of constructivist theories of learning/teaching, as is global development. Self-regulation refers to the ability to think, feel, and behave, without the direct help of others, while solving problems. Self-regulated learners not only know different learning strategies, but they also value and use them appropriately. As such self-regulation is a part and parcel of the notion of global development, wherein simultaneous development in all fronts (cognitive, affective, and behavioral) is desirable and hence, sought. To seek such goals requires educational methods compatible with their philosophical underpinnings. The traditional methods in education seem to lack such compatibility. Therefore, in any educational system, like that of Iran, wherein the utilization of these methods is commonplace, learners would not develop globally and would be dependent on others, a situation that clearly calls for change. Iran's 20 million strong student population in K-12 grades faces many challenges among which high rate of school-failure/grade-repetition and low performance on international tests of mathematics, science, and reading necessitate a re-evaluation of educational goals and methods. Efforts undertaken in this direction have resulted in in-service re-training courses on methods, among others. Nevertheless, the net effect of all such efforts should culminate in the last grade and be manifested in the college preparatory year. A group of 161 college preppies along with 50 of their teachers were randomly selected and surveyed on self-regulation and global development in relationship to the educational methods used in their school. The results support the advantage of the new methods that are based on constructivism. However, the actions taken seem more cosmetic than deep down alterations, as the new methods are filtered through the traditional thinking expressed in the traditional terms and concepts without addressing the philosophical underpinnings of both old and new methods.

The Problem

To improve any educational system, the system as a whole needs to be viewed, evaluated, and its problem spots identified before any alteration is undertaken. Partial examinations and cosmetic changes can not be effective and would probably lead only to more problems than resolving the exiting ones. Methods of teaching/learning are amongst the most prominent aspects of the educational process and changing them is expected to bring about the desired effect in the end products, i.e. the quality of the education that the graduates have made their own. However, methods are derived from theories and theories are based on certain philosophical underpinnings which would need to be altered if the change in methods is to

lead to changes in output. Methods based on the positivist philosophy and behaviorist theories can not be changed to those stemmed from the constructivist perspective unless the necessary adjustments in the philosophical and theoretical leanings of the system are also made. On the other hand, if sporadic and superficial changes could bring about improvement in the quality of the teaching/learning processes, and hence, in their products, such improvement would be evident in teachers/students during the last year of the public education programs. In other words, teaching methods would be more constructivist than behaviorist, and students would exhibit characteristics such as self regulation espoused by the constructivist approach.

The two approaches to learning/teaching, i.e. constructivism and behaviorism, have different philosophical bases. Constructivism is rooted in relativism, while behaviorism is footed in objectivism (Safe, 2002). Unlike the former, the latter considers reality existing independent of the individual who can learn about the reality through experience and the use of senses. From this perspective, learning is considered to be the transfer of facts from the environment to the organism (learner) wherein the learner's responses to the environmental stimuli and the reinforcements he/she receives determine if those reactions are repeated. Obviously the role of the teacher in relationship to the student is that of a person who transfers facts and reinforces reactions. Constructivism, on the other hand, considers reality as that which is constructed and conceived by the individual's mind wherein transferring from outside and by the teacher is seen as impossible; what is considered possible is the mind's reconstruction via the interpretation of new experiences through the old (Woolfolk, 2001). Meaningful learning is the aim of the constructivists and is approached through dealing with challenging problems, cooperating with others, and eager involvement in problem-solving process. Learners, from the constructivist perspective, learn how to learn, instead of accumulating facts ever so by rote (Nasraabaadee & Noroozee, 2003) and maintain an active role in the process of learning. Hence, at times, this method is called the active method.

In the active method of teaching/learning, according to Ghaasemzaadeh (2001), the teacher helps connecting the subject matter with the learners' previous experiences and conducts activities in which not only the learners' sense of responsibility is provoked, but their engagement in reasoning, exploration, and meaningful creation is also encouraged. As such, the teacher (the learning assistant) supports the learner in internalizing and claiming ownership of the subject matter, becoming a self- regulated and independent problem-solver (Hameedy, 1997), and develop globally. Perhaps the concepts of self regulation and global development need some explaining.

Self-regulation refers to the ability to explore and solve problems without the direct help of others cognitively, affectively, or behaviorally, although, according to Vygotsky, learners need others to develop this ability. All personal abilities, from this perspective, initially

develop at the social level and then through the interactions of the individual with the group utilizing cultural instruments like language, are internalized. This is especially true of the higher cognitive abilities. The developing child passing through the three stages of social speech, egocentric speech, and internal speech develops the ability to monitor and guide his/her thoughts, affects, and behaviors and hence, ensuring the quality, accuracy, and speed of her/his learning (Azabdaftaree, 2002). According to Zimmerman (2000), self-regulated learners have characteristics such as being self-evaluative, purposeful, organized, and planning oriented. As a result, in seeking new knowledge, they recognize their personal characteristics and abilities in learning, seek the help of appropriate others, and organize their time and place of learning wherein appropriate learning approaches are employed, the most important aspects of what is to be learned is recognized, notes are taken, points are reviewed mentally, and messages are given to self. As such, the self-regulated learners are involved with the learning tasks in all three dimensions pursuing cognitive, affective, and behavioral objectives through appropriate strategies.

Simultaneous and active pursuit of objectives in all domains (global development) and emphasis on higher level functions is what distinguishes the constructivist approach from the positivist perspective and methods. In the positivist methods learners are expected to perform tasks that require only low level cognitive functions of memorization and comprehension and occasionally usage. As such, the learner develops unidimensionally and minimally at that. In the constructivist approach, on the other hand, not only the cognitive dimension is attended to, but the affective and behavioral dimensions are equally considered (Sha'baanee, 2003), of course along the physical which is the basis of the other three! As a result the learner develops multidimensionally and maximally at that, capable of critical and creative thinking and reasoning while becoming independent and self regulated. Given this philosophical, theoretical, and methodological development or improvement, it is crucial to see if the educational practice has also moved from its positivist past to a constructivist present, especially in a developing country like Iran.

The twenty plus million student population of the public school system in Iran is facing many challenges. Among these challenges, the high level of school failure, decrease in the number of graduates at all levels (elementary, middle school, and high school), and low level of performance on international competitions loom high. Having one million students across all 12 grades fail their grade in 2003, of which were 27% of the high school population (Haajee, 2003), or ranking 38th among 41 countries in TIMMS, 2001 and 32nd among 35 countries participating in PIRLS (Hameedy, 2005) are all indicative of the fact that some fundamental aspects of the educational system in Iran need to be revised. The problem in some provinces is worse. In West Azarbaijan province the extent of school failure was higher than the national average (87% vs. 85%) during the previous academic year when 15% of the pre-college students failed their grade. Efforts have been made in the direction improving the system including extensive in-service training for teachers in the area of teaching methods,

and new curricula for the students. **Whether these efforts have bore fruit and teachers' methods have improved to be constructivist in orientation, or students have become multidimensional and self-regulated learners are the questions addressed here**. The purpose of asking these questions, or the aim of this study in trying to answer them, lies in the general goal of improving the quality of education in Iran so that the failures are reduced and rankings are increased. However, a tentative answer to these questions (i.e. the hypothesis) can be found through a literature review.

The hypothesis

Research literature on teaching methods and student characteristics is extensive. This body of information indicates that in most of the developing countries the prevailing teaching method is still the traditional teacher-centered, unidimensional, unidirectional, and learner-pacifying method (Nasraabaadee & Noroozee, 2003). However, the bulk of research conducted through out the world is indicative of the effectiveness of the more modern methods that are student-centered, multidimensional, multidirectional, and learner-active (Fatheeaazar, 2003). Among the works conducted in Iran, Kiyaanee (2004), for example, has shown that the use of the so called active methods of teaching improves students' cognitive, affective, and behavioral achievements. Learners in these studies were found to be self-initiating and explorative while their teachers were facilitators. Aasemiyaan (2005) has found self-regulated students to be higher in achievement since they are goal oriented and interactive while aware of the whys and ways of becoming self-regulated. In cross border studies, like that of Ablard & Lipschultz (1998) and Ommundensen (2003), similar findings are reported. However, the Iranian studies suffer from some theoretical and methodological shortcomings such as not having a clear theoretical framework or validated instruments. Nevertheless, it was expected (hypothesized) that most of the teachers participating in the present study use methods that are mostly traditional (positivist), but the students of those who use methods with constructivist leanings show higher degrees of global development and self regulation than the students of the other group.

Methods

As indicated by the above hypotheses, there were two groups of data sources in this study who were questioned on the teaching/learning methods employed and on self regulation: a group of teachers and a group of students. Both groups answered questions while in school and a month before the final examinations. The data was collected by one of the researchers in both individual and group settings during the morning hours when both groups were fresh enough to answer questions accurately and whole-heartedly.

The student group consisted of 161 pre-college (12^{th} grade) students who were selected from among all such students in the city of Tabreez using a randomized cluster sampling method. The reason for choosing 12^{th} graders was the assumption that if public education system has been successful in bringing about positive changes in the student population in

terms of becoming self-regulated, such improvement would be much more clearly evident in the final year when a great deal of self regulation is needed in studying for the awesome University Entrance Exam. The teacher group consisted of 50 who were teaching 12th grade and selected randomly from among all such teachers in the same set of 13 schools from which the student sample was selected.

The instruments used in this study were two questionnaires (TQ & SQ) specially constructed in order to measure teachers' methodological tendencies (globality) as well as their opinions on students' self-regulation (TQ1 & TQ2) and students' self regulation as well as their opinions on the globality of teachers' methods (SQ2 & SQ1). Both questionnaires included 40 statements divided in two equal sections. Their validity was confirmed by three educational psychologists following revisions based on their initial feedbacks. The instruments' reliability was determined using two different samples of the data sources each consisting of 30 students/teachers. Cronbach's alpha for the two sections of the TQ were 0.58 and 0.77, while the two sections of the SQ yielded alphas of 0.64 and 0.68 respectively. Given that each of the statements in each instrument was accompanied by a four point scale, the data so collected were assumed to be interval and analyzed accordingly.

Results

Based on the data collected by the TQ1 and SQ1, both teachers and students were, collectively and separately, categorized into two groups who identified the methods used in their schools as having either positivist or constructivist features. When categorized collectively, of the 211 teachers and students surveyed 83 identified the methods used as constructivist (CM) while the remaining 128 gave signs of the methods being positivist (PM) in characteristics. A difference that showed to be significant ($\chi 2= 9.41$, df=1, α = o.01). The data on self-regulation obtained from these two groups of students and teachers (SRCM & SRPM) were compared and showed the CM group as being significantly more self-regulated ($t = 2.17$, df = 209, $\alpha = 0.05$). Furthermore, the CM group paid significantly more attention to each of the three developmental dimensions than those in the PM group ($\alpha = 0.001$), i.e. they were more global in their approach to academic achievement. However, when the categorization was done for teachers and students separately, a different picture emerged.

In categorizing the respondents separately, while 43 of the 50 teachers identified their methods as being constructivist in nature, only 40 of the 161 students did so; which means the majority of students considered methods as being positivist in orientation. Nevertheless, the self-regulation data provided by the subgroups (i.e. the subgroup of 43 CM teachers vs. the remaining 7 PM teachers) again show a significant superiority of the constructivist method ($t =1.98$, df =48, $\alpha = 0.05$). The student subgroups showed the same result as well. That is to say that the 40 CM students had a significantly higher self regulation than the 121 PM students ($t =1.67$, df =159, $\alpha = 0.05$). The data on the globality question show yet a different picture when teachers are considered separately from the students.

The CM students considered each of the three dimensions of global development as being more significantly attended to in their schools than the PM students ($\alpha = 0.001$), while the CM teachers considered **only** the affective dimension as being more significantly attended to in their schools compared to the PM teachers ($\alpha = 0.01$). All in all, the data analysis shows that despite the advantages of constructivist methods, the majority of the students and teachers consider the methods used in their schools as being positivist in orientation.

Conclusions

The present study, concerned with the improvement of the quality of education through philosophical, theoretical, and methodological changes, has looked at the characteristics of the current teaching methodologies in the Iranian city of Tabreez, in terms of being constructivist or positivist in nature. The purpose has been to see if attempts at changing the traditional positivist methods to more modern and constructivist ones have succeeded and whether the logical consequences of such a change have been obtained. More specifically, it was asked if the majority of teachers use the new methods, and, where these methods are used, if the student characteristic of self regulation and the methodological characteristic of globality are attended to. The literature review led to the hypotheses that no, the majority of teachers don't use constructivist methods, but those who use them have students who are more self-regulated and globally developed. Results support these hypotheses.

The first hypothesis regarding the dominance of positivist methods is supported given that the majority of the respondents (teachers and students together), as well as the majority of the students, have characterized the methods used as those which are teacher and one-book-centered, emphasizing rote memorization and ignoring higher level cognitive abilities as well as the affective dimension. However, the fact that the majority of the teacher respondents have identified with the constructivist methods and hence, challenging the view of the students, is compatible with the findings of Yoosofee (2003) and Kosaree (2001) who report on teachers knowing about the new methods but not using them. The main finding in this regard is compatible with how Nasraabaadee & Noroozee (2003) has characterized the developing countries as those in which the new methods have not been well received. On the other hand, the extent to which these methods have been received has to also be taken cautiously since their adaptation without the more underlying philosophical and theoretical requirements could not lead to that much of an improvement, as the other findings of the present study regarding the second and third hypotheses suggest.

The second hypothesis regarding the development of self regulation as a result of using constructivist methods, or as the prerequisite for the success of such methods, is also supported since those respondents who were associated with these methods were also more self-regulated, regardless of whether they were compared collectively or separately. This finding is compatible with the findings of Ablard & Lipschultz (1998), Decie (1996),

Ommundensen (2003), Kadeevar (2001), and Shaaterloo (2005) who have found those who are more active and better achievers are also those who are self-regulated. The constructivist methods demand such a characteristic since they are student centered and it is the student who is considered responsible for his/her learning. Nonetheless, in the present study the advantage of the CM group over the PM group in terms of self regulation, although statistically significant, was not numerically that much higher, lending support to the notion that changes brought about as a result of the change in methods are not deep enough to indicate fundamental philosophical and theoretical alterations needed if the new methods are to be as effective as they potentially are. The other findings of this study lend further support to this notion.

The findings on the third hypothesis which exerted the constructivist methods focus on the multidimensionality of the learners and simultaneously foster their cognitive, affective, and behavioral development, are also supportive. The CM group of the respondents consistently scored higher on all three dimensions of development in comparison with the PM group, just as was the case with the CM students in relation to the PM students. However the CM teachers scored higher than their PM counterparts **only** in the affective dimension, meaning that they did not consider the two methods differing in their emphasis on the cognitive and behavioral dimensions. The first two of these findings are consistent with the theoretical foundations of the study as it exerts that the constructivist methods are multidimensional in their concerns and effects. However, the differing results yielded by the teachers indicating that the constructivist methods are only partially more effective than the positivist ones, and the numerically insignificant observed differences in this domain as well, could again be because of the teachers' lack of internalization of the philosophical and theoretical bases of the method; a method that considers the three dimensions as interconnected and inseparable; so much so that any changes in one leads to alterations in others. The support for the third hypothesis is also consistent with the findings of Yoosofee (2003), Gharehaaghaajee (2003), Kosaree (2001), and Saarem (1995) establishing that in the positivist methods the affective and behavioral dimensions are not attended to, while the attention given to the cognitive dimension is minimal and limited to its lowest levels. All together, the findings of this study pave the way for some changes in the practice, as well as some new research projects in this area, despite the study's now seemingly apparent shortcomings.

Among the lately discovered shortcomings of the present study, given the small numerical differences where statistically significant differences were reported, the instruments used in the study have to bear the brunt. Efforts should have been undertaken to improve their reliabilities. Having been multidimensional in its approach, the present study should also have collected data through observing, interviewing, and even testing the participants using more reliable instruments. Any future research should consider these shortcomings. Nevertheless, the in-service training programs setting up courses in new

teaching methodologies need to focus on the philosophical and theoretical underpinnings of the methods so that the courses would be multidimensional in this respect as well.

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