

Comparison of Teaching Strategies used by Science Teachers at Public and Private Secondary Schools in Punjab

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Abstract

Science education is vital for the development and prosperity of the country. Basic theme of the study was to know the use of teaching strategies in science teaching learning process. Main objectives of the study was to identify and compare the teaching strategies used by the science teachers in public and private secondary level. A sample of 80 was selected randomly three regions of Punjab province i.e., southern, northern and central Punjab. A five point rating scale was developed and administered on the selected teachers. Collected data was analyzed through SPSS software.

Results of data analysis showed that according to the teachers' point of view, private school teachers perform significantly better way as compared to public school teachers in the use of science teaching strategies for the teaching of science subjects. Male secondary school teachers responded that private school teachers use science teaching strategies in a better way as compared to public school teachers in the teaching of science subjects. Female secondary school teachers mentioned that use of science teaching strategies for the teaching of science subjects in 10th class is better in private schools as compared to public schools. It is recommended that there should be refresher courses for science teaching for all teachers particularly private school teachers for better performance. There should be compulsory training courses for all teachers regarding teaching strategies for science teaching to improve the teaching learning process at school level.

Key Words: Science Teaching, Teaching Strategies, Public Sector, Private Sector

Background:

All over the world schooling is considered as base for the development of that nation but on the other hand it is having multiple trends i.e. information technology, socio-cultural and globalization. With the passage of time learning needs are being changed rapidly due to multiple reasons particularly to fulfill social needs of learners for better social adjustment. Education is not only simple professional training of individuals but to train them for scientific thinking in resolving professional and daily life problems.

Students memorize definitions, formulae and other facts which are not fit to solve the real life problems. Therefore, there is dire need to make the teaching learning process aligned with the 21st century needs. (Windschitl, 2009) was of the view that teachers focus on just completion of syllabus by using lecturing and other less effective methods. Teachers' teaching strategies make the process either effective or ineffective depending upon the teachers' methodology (Fitzgerald, 2013).

Furthermore, teaching strategies for science teaching are more important as compare to other subjects. But normally it is observed that teachers avoid from science teaching which shows low efficacy in science teaching Bergman (2015). Low efficacy leads to lower performance in science teaching strategies. However, most of the teachers only use lecture method to teach all the subjects even Mathematics, Physics, Biology and Chemistry. Innovative and practical teaching methods are necessary for the teaching of science subjects (Velthuis, 2014).

To get better the quality education there is need to change the teacher's obligation towards students but there is also need to find out the factors that affect their assurance (Herring, 2012). In school as an organization; teacher is a manager in amplified version and provides arrangement for the management of organization (Velthuis, 2014). Teachers define frames for both windows open for the world and lenses that brings the world into focus. Behavior of teachers has received more attention in studies of the work place. Teachers' attitude has a well-known role in the improvements of teaching learning process (Tan, 2017).

However, efficient learning could not get without appropriate commitment. Teachers and students are stern to accept straight forward rules and methods of teaching. They learnt that how lecture to be started, how to control the class, and how a student should use the board. Strategies of teaching are not playing their responsibility effectively. The schools are not presenting the teachers for future (Andrabi, 2008). The teachers and administration of the participating schools do not have the information about appropriate techniques, which are utilized for practice of teaching. They are not well conscious the role of teaching strategies for future generation (Ajaja, 2013).

Results indicated that the teaching staff should approve the touching method for teaching of all subjects. Findings showed that it may cause students advance in the process of learning. The supportive methods of teaching elicited in the study are gorgeous for many students, but they also arise to produce a significant development toward learning outcomes (Kwok, 2018). One phrase of teachers' success in teaching is to contribute in teacher preparation programs.

The purpose of education should not only be to train professional scientists but also to introduce students to scientific thinking which will make them better citizens. (Kwok, 2018). Unfortunately the educational process at all levels of the school is often seen out of real

Comparison of Teaching Strategies used by Science Teachers at Public and Private Secondary Schools in Punjab

life. Students are burdened with the memory of the facts. A large number of students feel that their discipline and content cannot relate to the real world. Teachers must make changes in teaching and learning strategies to adapt updated system of education.

The private authority sectors caused owing to superior language recognition and actually they originate the English learning in earlier age. The results showed that in each aspect attainment of students' scores were tertiary in private sectors. Moreover, students' achievement in private school is considered better as compared to public schools in Pakistan (Bergman, 2015). The findings revealed that students of private schools performed good than the public schools

There are two sectors working side by side in the field of secondary education, i.e. private sector and government/public sector. In developing countries like Pakistan where the population growth rate is about 3 percent and only about 20 percent of the existing children are in schools for education. Government schools provide fewer facilities as compared to well renowned private schools (Akbar, 2002). On other hand, there are mainly two categories of private schools

There is dissimilarity between government and private liberty of management in schools of Pakistan. Administrators of private schools enjoy the more freedom as compare to government administrators that allow them to play significant role toward advancement of schools. Hiring and firing of teaching staff and supporting staff help administrators to achieve goals in a better way. Hiring of administrators for public and private schools depends upon the quality of decision-making when the administrators are hired (Simkins ,2003). Staff of private schools is more successful in term of responsibilities as compare the public schools' staff (Memon, 2005).

Above discussion regarding use of multiple teaching strategies for the teaching of arts and science subjects at secondary school level highlighted different directions regarding research on teaching strategies. Secondly, there are two parallel sectors for schooling at secondary level i.e. private sector and public sector. Both the sectors claim their efficiency regarding use of multiple innovative strategies. Present study will provide empirical evidence regarding teaching strategies used for the teaching of science subjects in public and private sector at secondary level.

To collect data a sample of 80 teachers was selected from the accessible population. A questionnaire based on five-point Likert scale was developed for teachers. The collected data was analyzed and results are given the table below:

Table 1

Comparison of Teaching Strategies Used by Science Teachers in Public and Private Sector as Perceived by Teachers

Teaching Strategies Regarding	Public, N=41		Private, N=35	
	Mean	SD	Mean	SD
Individual Differences	4.053	.549	4.242	.343
Collaboration	4.063	.386	4.262	.338
Flexibility in Learning	4.063	.386	4.262	.338

Teaching Methodology	4.129	.298	4.334	.248
Thinking Skills	4.133	.371	4.345	.282
Self -Regulation	4.268	.431	4.307	.304
Total	4.118	.322	4.292	.204

There are many science teaching strategies that can be used by secondary school science teachers for science teaching at secondary level. Study was delimited to only six teaching strategies. Data was collected from public and private school teachers to see the comparative look of public and private sector performance in science teaching. Above table 1 highlights a comparative view about the use of teaching strategies by science teachers in public and private sector. All the teaching strategies are used in a proper way, as the mean values of all strategies are more than 4 (average $M=4.118$, $SD=.322$). This means that all the public sector teachers are agree that teaching strategies .i.e. teaching strategies regarding individual differences, collaboration, flexibility in learning, teaching methodology, thinking skills and self-regulation are used properly. On the other side, private school teachers were of the view that multiple teaching strategies are used by them for science teaching at secondary level. Mean values show that teachers from private sector use science teaching strategies in a better way as compared to public sector school teachers. Mean values show that strategies regarding improvement of self-regulation ($M=4.268$, $SD=.431$) are used at maximum level by public school teachers. But in private sector, secondary school teachers use strategies at the top level for the improvement of thinking skills ($M=4.345$, $SD=.282$) of students. Graphical description about the science teaching strategies is shown in the figure below:

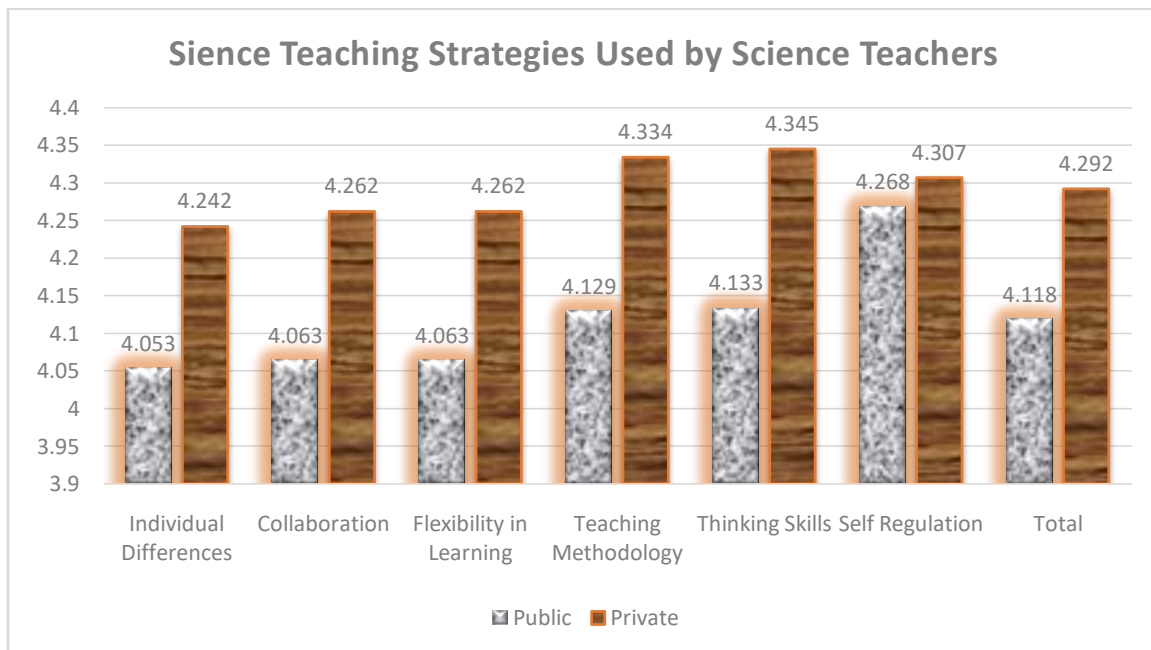


Figure I: Comparison of Teaching Strategies Used by Science Teachers in Public and Private Sector as Perceived by Teachers

Comparison of Teaching Strategies used by Science Teachers at Public and Private
Secondary Schools in Punjab

Table 2

Comparison of Teaching Strategies Used by Male Science Teachers in Public and Private Sector as Perceived by Teachers

Teaching Strategies Regarding	Public, N=23		Private, N=17	
	Mean	SD	Mean	SD
Individual Differences	4.134	.550	4.361	.349
Collaboration	4.163	.344	4.363	.309
Flexibility in Learning	4.163	.344	4.363	.309
Teaching Methodology	4.096	.311	4.400	.203
Thinking Skills	4.138	.395	4.412	.235
Self-Regulation	4.359	.390	4.368	.267
Total	4.175	.305	4.378	.16784

Above table 2 shows comparative point of view about the use of teaching strategies by male science teachers in public and private school. Results show that various teaching strategies for the teaching of male science subjects are used properly by both public and private male school teachers. As all the teaching strategies are used properly in public schools by male teachers but strategies for the development of self-regulation (M=4.359, SD=.390) among students are at the top level. In the same way, male private school teachers were of the view that multiple teaching strategies are used by them for science teaching at secondary level. Mean values show that male teachers from private sector use science teaching strategies in a better way as compared to male public sector school teachers. In private sector, male secondary school teachers use strategies at the top level for the improvement of thinking skills (M=4.412, SD=.235) of students. Graphical description about the science teaching strategies is shown in the figure below:

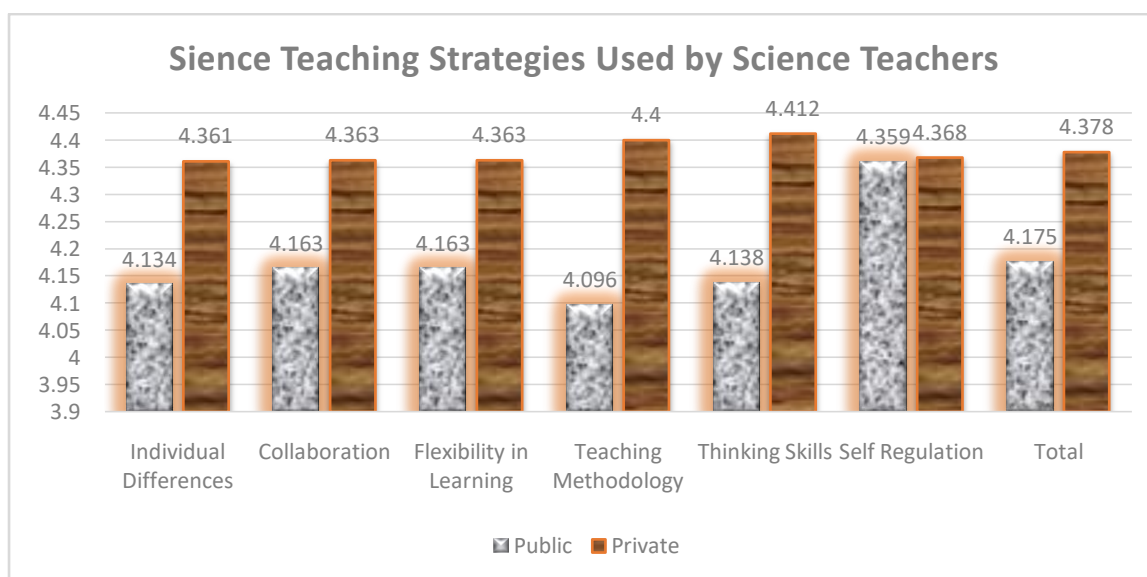


Figure II: Comparison of Teaching Strategies Used by Male Science Teachers in Public and Private Sector as Perceived by Teachers

Table 3

Comparison of Teaching Strategies Used by Female Science Teachers in Public and Private Sector as Perceived by Teachers

Teaching Strategies Regarding	Public, N=18		Private, N=17	
	Mean	SD	Mean	SD
Individual Differences	3.949	.546	4.130	.305
Collaboration	3.935	.408	4.167	.345
Flexibility in Learning	3.935	.408	4.167	.345
Teaching Methodology	4.172	.284	4.272	.276
Thinking Skills	4.127	.347	4.282	.313
Self-Regulation	4.153	.463	4.250	.332
Total	4.045	.336	4.211	.206

Mean values show that various teaching strategies for the teaching of female science subjects are used properly by private female school teachers. But in public schools, three teaching strategies .i.e. teaching strategies regarding individual differences, collaboration, flexibility in learning were not used properly as the mean value is less than, while other three teaching strategies i.e. strategies for teaching methodology, thinking skills and self-regulation were used properly and female teachers are satisfied about their use of these teaching strategies. According to the point of view of female teachers, female public school teachers use strategies for the development of self-regulation ($M=4.153$, $SD=.463$) at the top level. On the other side, female private school teachers were of the view that they use science teaching strategies in a better way as compared to female public school teachers. In private sector, female secondary school teachers use strategies at the top level for the improvement of thinking skills ($M=4.282$, $SD=.313$) of students.

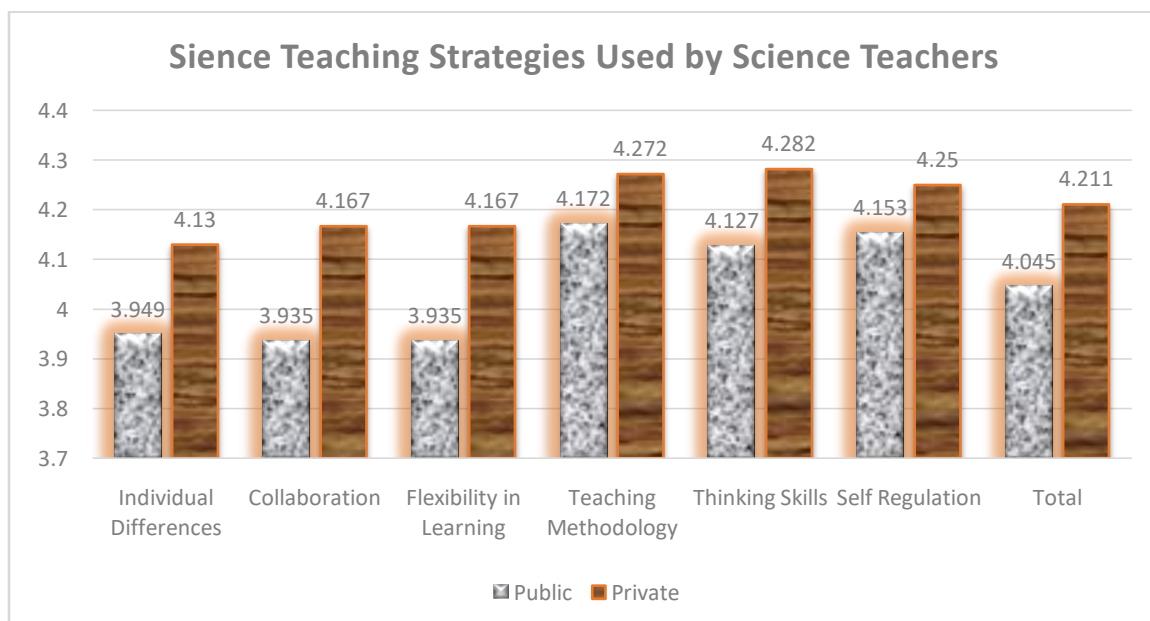


Figure III: Comparison of Teaching Strategies Used by Female Science Teachers in Public and Private Sector as Perceived by Teachers

Comparison of Teaching Strategies used by Science Teachers at Public and Private
Secondary Schools in Punjab

Table 4

Comparison of Teaching Strategies Used by Urban Science Teachers in Public and Private Sector as Perceived by Teachers

Teaching Strategies Regarding	Public, N=25		Private, N=18	
	Mean	SD	Mean	SD
Individual Differences	4.163	.597	4.273	.342
Collaboration	4.087	.435	4.306	.343
Flexibility in Learning	4.087	.435	4.306	.343
Teaching Methodology	4.192	.328	4.356	.266
Thinking Skills	4.221	.345	4.436	.282
Self-Regulation	4.310	.479	4.375	.300
Total	4.177	.356	4.342	.198

Table 4 gives comparative view of urban teachers from public and private schools. Mean values shown in the table are at satisfactory level. According to urban school teachers' point of view both public and private secondary school teachers use multiple science teaching strategies properly. In public schools, urban science teachers use strategies of self-regulation (M=4.310, SD=.479) at the top level. On the other side, urban teachers from private schools were of the view that they use science teaching strategies in a better way as compared to urban public school teachers. In private sector, urban secondary school teachers use strategies at the top level for the improvement of thinking skills (M=4.436, SD=.282) of students.

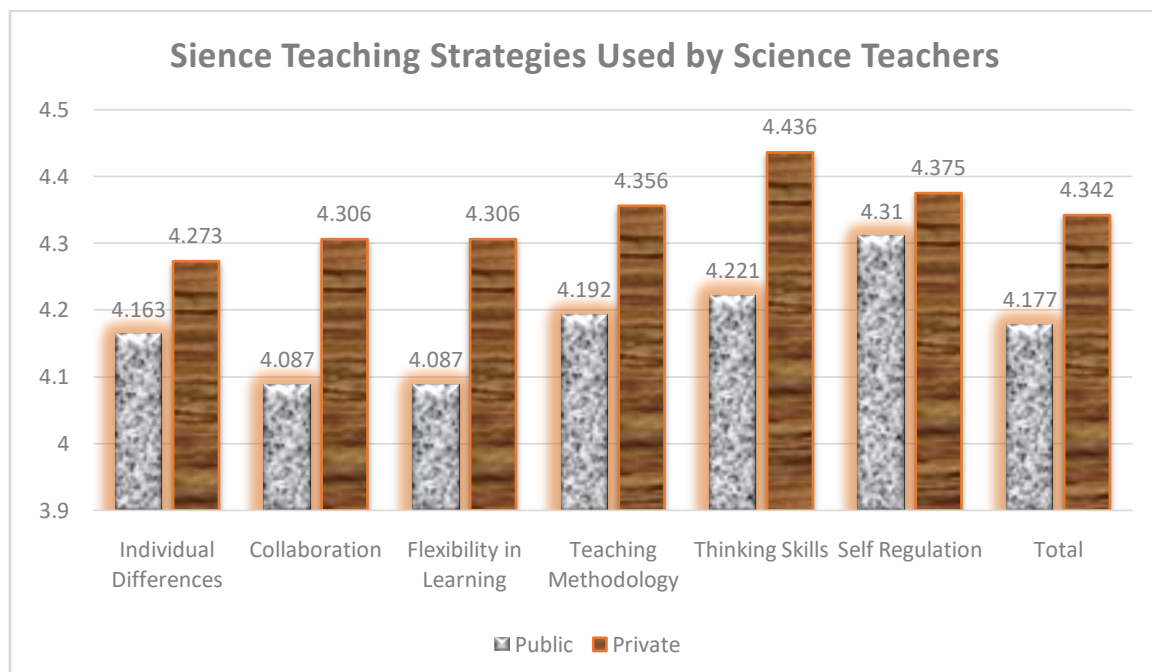


Figure IV: Comparison of Teaching Strategies Used by Urban Science Teachers in Public and Private Sector as Perceived by Teachers

Table 5

Comparison of Teaching Strategies Used by Rural Science Teachers in Public and Private Sector as Perceived by Teachers

Teaching Strategies Regarding	Public, N=16		Private, N=17	
	Mean	SD	Mean	SD
Individual Differences	3.880	.428	4.209	.353
Collaboration	4.026	.302	4.216	.337
Flexibility in Learning	4.026	.302	4.216	.337
Teaching Methodology	4.031	.221	4.312	.234
Thinking Skills	3.996	.378	4.249	.256
Self Regulation	4.203	.368	4.235	.299
Total	4.027	.241	4.239	.203

Locality wise comparative view public and private rural teachers' responses about the use of science teaching strategies are shown in the table above. Data analysis results shown in the table are at satisfactory level except strategies regarding individual differences and strategies regarding thinking skills in public sector only. In public sector schools, rural science teachers use strategies of self-regulation ($M=4.203$, $SD=.368$) at the top level while strategies for individual differences ($M=3.880$, $SD=.428$) are at the bottom level. Results highlight that rural secondary school teachers use science teaching strategies in a better way as compared to public school teachers. In private sector, rural secondary school teachers use strategies at the top level about the use of different teaching styles for science teaching ($M=4.312$, $SD=.234$).

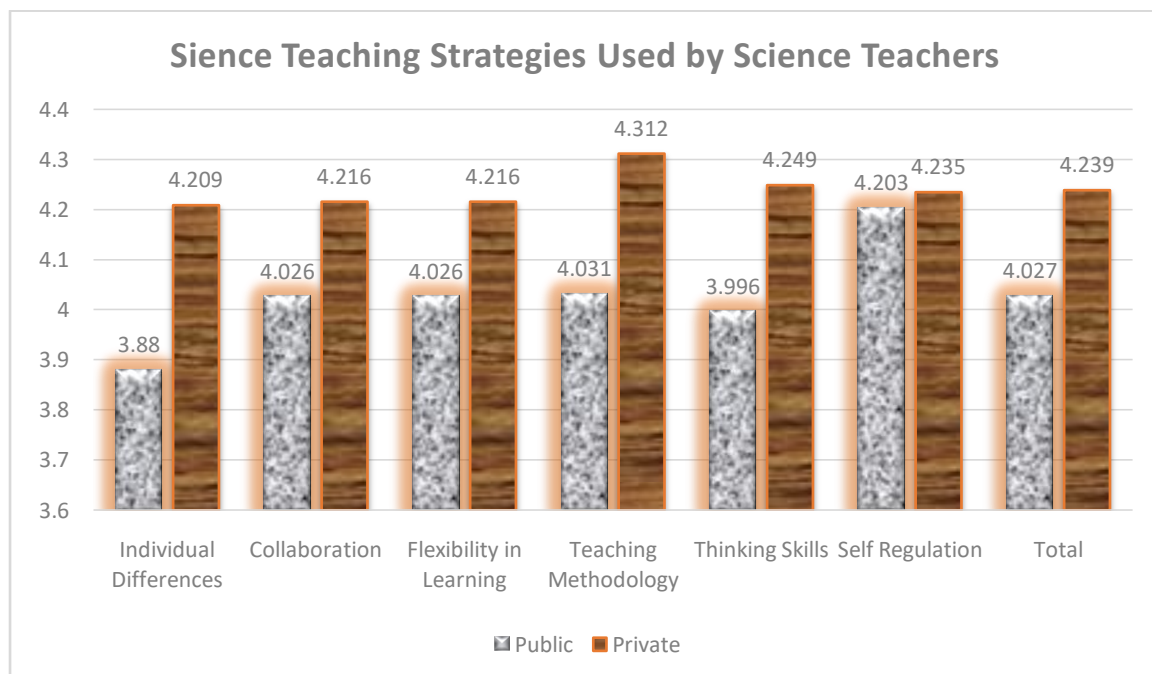


Figure V: Comparison of Teaching Strategies Used by Rural Science Teachers in Public and Private Sector as Perceived by Teachers

Comparison of Teaching Strategies used by Science Teachers at Public and Private Secondary Schools in Punjab

On the bases of above data analysis and results it is concluded that according to the teachers' point of view, private school teachers perform significantly better way as compared to public school teachers in the use of science teaching strategies for the teaching of science subjects. Male secondary school teachers responded that private school teachers use science teaching strategies in a better way as compared to public school teachers in the teaching of science subject. Female secondary school teachers mentioned that use of science teaching strategies for the teaching of science subjects in 10th class is better in private schools as compared to public schools. Furthermore, it was recommended that there should be refresher courses for science teaching for all teachers particularly private school teachers for better performance, and there should also be compulsory training courses for all teachers regarding teaching strategies for science teaching to improve the teaching learning process at school level.

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