

Analyzing time and space elements in science curriculum in elementary schools of IranMahtab Shakuri¹ Mostafa Sheikhzadeh²¹ Department of education, Urmia branch, Islamic Azad University, Urmia, Iran² Department of education, Urmia branch, Islamic Azad University, Urmia, Iran

Abstract: This research is done to examine and understand time and space elements in science curriculum in elementary period from Urmia's teacher's point of view. Here method of research is descriptive- scaling and statistical population contains all of the teachers of elementary schools in zone 1 of Urmia in academic year 90-91 with 972 persons (293 males and 679 females). Classified random sampling method is used and sample volume is calculated through Kerjesi and Morgan 274 persons schedule. For collecting data two types of researcher made questionnaires are used that are settled as Likret spectrum. Results showed that time and space that teacher has control over them suits with none of content, teaching method and evaluation elements. In this field teachers see necessary to add one hour to current hours in order to cover curriculum goals better. Also most of teachers believe that academic space with a view to variables such as (academic technology, health, heating and cooling and ...) doesn't suit with elementary science teaching that specific consideration should be taken in this field.

[Mahtab Shakuri, Mostafa Sheikhzadeh. **Analyzing time and space elements in science curriculum in elementary schools of Iran.** *Life Sci J* 2013;10(5s):587-592] (ISSN:1097-8135). <http://www.lifesciencesite.com>. 102

Keywords: curriculum, content, evaluation, space, time, science, problem

1. Expression

Curriculum is as a course that various languages and dialogues are used in it and therein technical language or curriculum planning composes just one language or dialogue. Other dialogues such as art, gender, phenomenological, post modern and etc also exists that are conceptualized in new course (curriculum understanding) and will be analyzed. There is no consensus among experts about curriculum elements. Curriculum contains wide range from one to nine elements. Ralf Tyler, knows elements as containing goals, learning experiences, organizing and evaluation (Fathi and Ejargah, 2007). Purpose of time in curriculum is dedicated time to the content that should be presented. In other words what time implies to it, is that selected content along with using approaches and materials in obtaining curriculum goals are presented in time framework. There are different views about teaching time and its segmentations. Moosapoor (1999) knows time in curriculum as containing 3 following dimensions: a. beginning time (content presentation time) b. educating time (content presentation period) c. lesson position (content presentation order). In Katlin Katen's opinion (2010) time contains a. allocated: school time, class time, needed time for each lesson topic/ b .involving time in school/ c. activity of academic learning time and d. educational dead time (Abyazi et. al 2009, p 137). Role of learning time is approved in operation and learning stability through scientists that considering various time measures in curriculum for increasing their effectiveness and efficiency is seriously needed (Carl Nobel et. al 2009, p657). So time reality and drawing its proper

perspective adequate with goals and content and forecasting proper time and understanding its usefulness should be considered in curriculum planning (Dee pistema and Inke Vandron 2011, p 481). But space or academic environment is an element that all of the learning and teaching processes are done in it. Space effects on teaching and learning process and if it is inappropriate, seriously affects curriculum (Fathi and Ejargah, 2009, p131).Paying attention to growing importance of space role in promoting didactic goals in education systems in all around the world is increasing (Jingon Li et. al 2011, p731; Katrine and Yang 2011, p 484). Considering explanation of stated variables and also critical role of these two elements in science curriculum in elementary period, this research is intended to analyze space and time elements in science curriculum from Urmia's teacher's point of view to establish more effective step in codification, teaching and learning of science curriculum in elementary period by settling a new approach.

2. Method of research

Goal of research is to analyze space and time elements in science curriculum from Urmia's teacher's point of view and considering this matter that teachers experience programs closely and directly in school and their responses and opinions toward running curriculum are important, so researcher had used descriptive- scaling method. Statistical population in this research contains all of the elementary school's teachers in zone 1 of Urmia in academic year 90- 91 that according to announcement of educating and training organization their number was 972 (293 males and 679 females).

Sampling method in this research according to considering gender is random classified that hereby feedback should be obtained equally from both male and female teacher's population. Sampling volume is estimated equal to 275 persons by using Morgan schedule that 83 persons are males and 192 persons are females. Data collecting tool in this research is researcher made questionnaire. For designing questionnaire, at first researcher settled a verbal interview with masters, teachers and curriculum professionals and other relevant experts and after preliminary study and analyzing interview's contents obtained conceptual frameworks and presented it as Likret scale (spectrum). Durability of measuring tools evaluated equal to 82%. For determining validity of questionnaire, content validity is used. For evaluating validity or validity of instruments, designed questionnaire presented to three curriculum professionals (faculty members) and also to three experienced and competent teacher and its result indicated content validity and at the same time valuable and solving advices of supervisors and advisors are used.

3. Discussion and conclusion

First question: from teachers point of view how much time element suits with science curriculum content in elementary period?

Results showed that most of teachers believe that time element (allocated time) doesn't suit so much with science curriculum content in elementary period. In other words the available time for teachers to teach science book is not sufficient and doesn't response to content of stated book.

Schedule 1: statistical indexes of X2 test about research's first question

Most of teachers believed that time element doesn't suit so much with science curriculum in elementary period; because as we see in above schedule significant level for related test (0.000) is smaller than 0.05. Point's average being smaller (2.96) from hypothetical average (3) also confirms above subject. Various researches indicate inconformity and lack of coordination of books content with available time for teachers. In this field results of Abyazi et. al research's results (2009) indicates that allocating 4 hours (2 sessions per week, each session 90 minutes) for teaching calculus is not sufficient nowise and the reason is bulk of the book and anxiety therefrom. In a similar research Nahardani (2009) concluded that allocated time for teaching *tamrin darmani* book doesn't suit with content of stated book In teachers point of view and needs more accuracy of relevant practitioners and authorities that these results overlaps results of current research.

Second question: from teacher's point of view how much time element suits with science curriculum teaching methods in elementary period?

Results indicated that from teacher's point of view their available time for using teaching methods is not suitable. In better words from their point of view teaching science curriculum by using some methods such as cooperative, short speech along with questioning, problem solving and explanatory just by teacher according to available time is not suitable.

Schedule 2: statistical indexes of X2 test about research's second question

Most of teachers believed that time element doesn't suit so much with science curriculum teaching method in elementary period; because as we see in above schedule significant level for relevant test (0.000) is smaller than 0.05. Point's average being smaller (2.92) from hypothetical average (3) confirms above subject. Research of Abyazi et. al (2009) about determined time with calculus curriculum teaching method showed that from teacher's point of view time element doesn't suit with calculus curriculum teaching method that this generally overlaps with findings of current research. But vice versa in this research from expert's point of view relevant time suited with teaching method and its cause was increased use of explanatory method by relevant teacher. In explanation of this finding it can be stated that in line with results of first question study, this finding seems logical too because according to lack of proper time for teaching of stated book's content it is normal that using of active methods such as cooperative learning, problem solving and etc to be impossible. Various experts such as Peklaj (2006), Aghazadeh (2011) believe that since using above teaching methods needs proper feedback presenting, actively engaging of students in discussions, activity of learners and facilitating learning by teacher. So needs better benefiting of time for better overlapping of curriculum goals and making significant the learning.

Third question: from teacher's point of view how much time element suits with science curriculum evaluating methods in elementary period?

Results of research about this hypothesis also indicate disproportion of evaluation methods with science curriculum. In more appropriate words most of teachers believed that time element (available time for teachers) doesn't suit with science curriculum evaluation methods in elementary period, so that they can't evaluate students instructions within this time.

Schedule 3: statistical indexes of X2 test about third question of research

Most of teachers believed that time element doesn't suit so much with science curriculum

evaluation methods; because as we see in above schedule significant level for relevant test (0.000) is smaller than 0.05. Research of Abyazi et. al (2009) about this hypothesis is in line with finding of current research, because in their research students and teachers believed that it is impossible to use continuous methods of student's academic improvement in determined time. Also it should be stated that various researches indicate poor attention to evaluation factor as one of the key variables in curriculum planning, in this field it can be pointed to Yazdani (2007) that overlaps with findings of research. In comparison with findings of above two hypotheses this consistency seems logical and maybe one of reasons of this matter is respondent's (teachers) awareness and correct understanding of evaluating methods.

Forth question: from teacher's point of view how much is suit time for presenting science curriculum in elementary period?

In answering this question analyzing of respondent's frequency distribution according to their opinion about adding to teaching hours of science curriculum shows that 78% agreed to add to teaching hours and just 22% disagreed with this matter. Also analyzing of respondent's frequency distribution according to their opinion about adding to teaching hours of science curriculum indicates that 43.5% of respondents agreed with adding one hour to current teaching hours. Other percentages include (31.6% of them, 2 hours; 10.2% of them 3 hours; and 7.3% of them 4 hours- adding to current teaching time). In the mean time analyzing of respondent's frequency distribution according to extracurricular hour of science curriculum in school also shows that 60.7% of respondents believe that one hour should be added to current teaching time and this would be sufficient. So with considering above matters, in summary it can be concluded that most of teachers believe that one hour should be added to current teaching time and extracurricular of science curriculum that practitioners and training authorities should pay attention to it. Conducted researches in various countries also are different according to various curriculums and show different results. For example Smith et. al believe that in some countries like Netherlands, Belgium, and Scotland approximately 3.5 hours per week are allocated to teaching science curriculum (Dites and Nelson quotes, Saghatchian translation, 2009) and Piza shows that students in Italy and Denmark about 5 hours, in Greece about 4.8 hours, in Newzealand and Iceland about 4 hours, and in other European countries approximately 3 hours are allocated to science curriculum teaching (Abyazi et. al quote, 2009). In sum according to various conducted researches it can be stated that role of time

in learning and student's academic improvement is essential and relevant authorities should pay attention to this matter alongside other elements such as curriculum goal, learning activities, grouping, space, quality of teacher's teaching, type of lesson plan, students motivation and etc and also they should consider results of such researches for using in real world.

Fifth question: from teacher's point of view how much space element suits with science curriculum content in elementary period?

For answering this question and analyzing that how much space element suits with science curriculum content in elementary period, X test is used and results showed that from most of teacher's point of view space element (allocated space) doesn't suit so much with science curriculum content in elementary period. In other words available space for teachers for teaching science book is not an appropriate environment and is not accountable for teachers and students needs.

Schedule 4: statistical indexes of X2 test about fifth question of research

Most of teachers believed that space element doesn't suit so much with science curriculum content in elementary period; because as we see in above schedule significant level for related test (0.000) is smaller than 0.05.

Moinpoor, Nasr and Saedi (2004) in their research analyzed effect of class's physical factors on student's academic improvement, their research's results showed that in sum relation between weighted average of indices and education spaces in general with student's academic improvement is not statistically significant, in other words available education spaces is not coordinate with education needs in true meaning that generally overlaps with finding. Also Bibarez and Kokamoolah (2009) in a research about analyzing physic curriculum base on teacher's opinions; understood that activities that students should perform in physic curriculum are not compatible with physic's class space, so that environmental facilities didn't support them and allocated time for teaching one unit or performing one activity was not sufficient and teachers didn't have similar comments about it. In this regard Sigel believes that space's good location, expansion of education space in class and fitness of courses with defined space elements not only makes teachers and students effective for performing class good activities but also affects in formation of good and professional social relations, sharing knowledge and information, for accelerated learning and improving academic performance. In this regard Mac Grigord (2004) with Meta analyzing of performed studies concluded that it is needed that defined spaces be considered as a

part of curriculum by teacher to overlap education content of each curriculum. So it can be stated that inconformity of education and class space with type and content of lessons affects directly and indirectly student's academic improvement that it is necessary to pay particular attention to this matter. Importance of these matters becomes clear when considered curriculum is science and its profile is elementary because basis of teaching science in elementary period is on emotional perception and observation and wants to teach all of its laws to students in this way.

Sixth question: from teacher's point of view how much space element suits with teaching methods in science curriculum in elementary period?

In answering this question of research in line with above question, X test is used. Results indicated that from teacher's point of view their available education space is not sufficient for using various education methods. In other words in their opinion teaching science curriculum by using methods such as cooperative learning, short speech along with questioning, problem solving, according to available space is not suitable and the only solution is using explanatory method just by teacher.

Schedule 5: statistical indexes of X- about sixth question of research

Most of teachers believed that space element doesn't suit so much with teaching methods of science curriculum in elementary period, because as we see in above schedule significant level for relative test (0.000) is smaller than 0.05. Point's average being smaller (2.88) from hypothetical average (3) confirms above matter. Various experts such as Kolaski and Mohseni (Tajbakhsh quotes, 2010) had verified coordination of education spaces with teaching methods that are planned for optimized implementation of various curriculums (ghazizadeh Qoutes, 2006) but from others point of view our available education spaces for reaching eligible standards to accomplish this task have a long way and this finding verifies this matter and notices necessity of such suitable spaces for using various teaching methods.

Seventh question: from teacher's point of view how much space element suits with science curriculum evaluation methods in elementary period?

Results of X- test about this hypothesis in line with previous two hypotheses about space element indicated incompatibility of evaluating methods with science curriculum. In other words most of teachers believed that space element or their available education space is not compatible with science curriculum evaluation methods, so that they can't evaluate student's instructions optimally according to this space.

Schedule 6: statistical indexes of X test about research's seventh question

Most of teachers believed that space element doesn't suit so much with science curriculum evaluation methods; because as we see in above schedule significant level for relevant test (0.000) is smaller than 0.05. Point's average being smaller than (2.90) hypothetical average (3) also confirms above matter. Results of this hypothesis in consistency with finding of third hypothesis explains a kind of coordination that as stated sounds logical and its cause seems to be conversancy with importance and manner of used evaluation methods by teachers. Maybe the other reason is not treating as easy to evaluate student's instructions that this kind of evaluation is not the same traditional evaluation that teachers just based on a kind of test be able to achieve student's learning quality at least in half an hour and judge about their improvement just based on it. Because of depending on the nature of the science course such evaluations should be based on multiple and different analyzes (for example separate activity of each student in problem solving or a particular task, portfolio presentation, making instrument, manner of activity in team work...) to analyze student's instructions as real and based on gradual steps (appropriate with behavioral objectives of each section) and it is obvious that reaching to such goals and such tests demands adequate time and big and appropriate space, that this research also indicates existence of such a problem.

Eighth question: from teacher's point of view how much space element about other variables such as (education technology, air conditioner, cooling and heating and etc) has required sustainability and competence for teaching science course?

Analyzing descriptive indexes and also X test about this hypothesis also indicates lack of sustainability and competence of education spaces whether classroom and school, in better words it can be stated that most of teachers believe that current education space about other variables such as (education technology, health, cooling and heating and etc) doesn't suit so much with science teaching in elementary period.

Schedule 7: statistical indexes of X- test about seventh question of research

Most of teachers believed that current education space about variables such as (education technology, health, cooling and heating and etc) doesn't suit so much with science teaching in elementary period, because as we see in above schedule significant level for relative test (0.000) is smaller than 0.05. Point's average being smaller (2.92) from hypothetical average (3) confirms above matter. In comparison with previous findings it should be said that obtained

results from research of Moinpoor, Nasr and Saedi (2004) about related indices to variables such as (black board, bench or chair, teaching aids, quality of class's cooling and heating) indicates that most of these facilities are evaluated in a moderate and desirable level and it has no significant relationship with student's academic improvement, but according to results of path analyze, level of education facilities indirectly affects on student's academic improvement that this matter generally is not in line with finding of current research. But research's of Zeinali Dehsahir (2010), and Etavinly and ghoo (2002) indicate existing deficiencies and insufficiencies in current education space that generally overlaps with finding of current research.

4. Recommendations

In the field of using results and findings of current research it should be said that according to inconsistency of time and space element with other curriculums like content, method and evaluation in science curriculum and considering their critical role in learning and teaching process, it seems productive that following suggests could be effective:

1. Authorities and planners and other practitioners should have doubled effort for improving quality of time and space for an acute course such as science.

2. It is necessary for managers to establish workshops to be able to become familiar effectively with importance and role of curriculum planning elements (and in their topside with time and space elements) due to advancing education and training goals to be able to provide appropriate fields for various curriculums in school.

3. To establish workshops for teachers to make them able with splitting available time to teach all contents of various parts of book and use all available facilities (whether workshops, laboratories,...) for better and more effective teaching of the book.

4. It is recommended to drafters of course books and education and curriculum planners to provide books in a way that leads teachers to optimal operation of time and education space.

5. It is recommended to respected education and training authorities to emphasis diligently to importance and role of teachers in the process of learning knowledge, because empowerment teacher is able with applying appropriate methods to show learning space desirable for students in the most difficult physical conditions. For example specific in service classes could be settled for teachers and managers for better managing of time and space.

6. According to the results of question four that 78% of respondents agreed with adding to teaching hours of science curriculum so it is suggested to add one hour optimal teaching of science curriculum.

Resources

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Significant level	Freedom degree	χ^2 calculated	Used test
0.000	4	191.6	χ^2

Schedule 1

Significant level	Freedom degree	χ^2 calculated	Used test
0.000	4	270.4	χ^2

Schedule 2

Significant level	Freedom degree	χ^2 calculated	Used test
0.000	4	258.36	χ^2

Schedule 3

Significant level	Freedom degree	χ^2 calculated	Used test
0.000	4	47/61	χ^2

Schedule 4

Significant level	Freedom degree	χ^2 calculated	Used test
0.000	4	225.63	χ^2

Schedule 5

Significant level	Freedom degree	χ^2 calculated	Used test
0.000	4	205.03	χ^2

Schedule 6

Significant level	Freedom degree	χ^2 calculated	Used test
0.000	4	72.54	χ^2

Schedule 7

3/21/2013