Vol. 3, Issue 2, 2023 (April – June)

ISSN 2710-4532 (Online) ISSN 2710-4524 (Print) ISSN 2710-4540 (ISSN-L)

Journal of Educational Research & Social Sciences Review (JERSSR)

Analyzing the Alignment of Content Weightages of Biology Assessment with National Curriculum-2006 at Secondary School Level

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Abstract

This study aimed at finding the alignment of the Biology (IX-X) assessment administered by the Abbottabad Board of Intermediate and Secondary Education (ABISE) with the National Curriculum-2006 (NC). The descriptive quantitative approach was used. The sample includes 24 subject-matter experts in Biology and papers for the academic session 2015-2019. The content analysis protocol was used as the research instrument. The extent of alignment was measured in percentages. It was found that for the session 2015; out of 6 only 2 sections were aligned whereas, for papers of the sessions 2016-19, none of the sections were aligned with NC. It was concluded that percentages of sections prescribed in NC-2006 and of BISE papers were not aligned at the secondary school level. It was recommended to formulate a committee that analyses the alignment of test papers with NC and a satisfactory report of the committee should be mandatory for each paper.

Keywords: Curriculum Alignment, Written Curriculum, Assessed Curriculum, Content Weightage

Introduction

According to Leitzel and Vogler (1994), the curriculum is a fundamental and important indicator of high-quality education since it is an all-encompassing strategy for achieving national objectives by bringing together teaching, learning outcomes, and evaluation with the standards that must be satisfied. That document reflects the confidence that parents, teachers, students, and community members possess regarding the knowledge, attitudes, abilities, and dispositions that will be taught to the kids. It covers everything that occurs at school and is the outcome of teacher-student interaction aimed at achieving particular goals. It is a comprehensive element of an educational setting that includes the student, the teacher, instructional tactics, learning approaches, interactions, and academic outcomes. The following four curriculum types, among others, are crucial in contribution of quality education. Written curriculum which represents societal needs and appropriate educational standards for specific level of education Supported curriculum is the physical and material requirements of delivering the approved curriculum (Hume & Coll, 2010). Taught curriculum is what the learners received by instructor or teacher in classroom (Kuhn & Rundle-Thiele, 2009). Assessed curriculum is the set of knowledge and skills which are tested to be achieved by learners and for assurance of achieving educational goals, the alignment among these four types of curricula is essential (Anderson, 2002).

Multiple layers of curricular interpretation have an adverse effect on the learned and taught curriculum and so in conflict with published one (Hume & Coll, 2010). Therefore, there might be a discrepancy between what's being instructed by the teacher and what is advised in the NC and what is being assessed by the Boards of intermediate and secondary education. The public exams in Pakistan promote rote memorizing and cramming, and they neither cover the key ideas of the subject matter nor evaluate students' creative abilities (Hall, 2002). Numerous studies have also questioned the reliability and validity of public exams in Pakistan for example (Khan, 2009).

Gulzar and Mahmood (2018) reported that standard-based curricula in Pakistan were updated in 2006 and implemented for secondary students in 2012. The descriptive quantitative study

performed on analysis alignment of curriculum at secondary level in Punjab, was done by Bhatti and Jumani (2015). An illustrative quantitative review led on examination of educational plan arrangement at secondary level in Punjab, was finished by Tsebella and Kassa (2022). Content weightage, learning domains weightage and structuring of assessment and evaluation tools as mentioned in National Curriculum -2006 were not addressed in that study

According to Martone and Sireci (2009), the extent of coordination among various constituents of the educational system to achieve a common objective is known as alignment. Planning, delivery, and assessment are the three main parts of education. When the intended content (curriculum) is followed, delivering the content (instruction) and evaluating the material (evaluation), the curriculum is said to be aligned (Leitzel & Vogler, 1994). Curriculum alignment is described by English and Steffy (2001) as the degree to which curriculum, tests material, and formal instruction align or overlap.

To examine how well the declared curriculum's objectives have been achieved, curriculum assessment is employed. Curriculum alignment is defined by educational experts like Contino (2013) as the fit between standards and evaluation. It guarantees that the learning process is in harmony with what is intended. Students won't do well on tests if the evaluation is not in line with the curriculum. As a result, the instructors would rather not use the curriculum in the classroom (Li, 2006). The misaligned assessment cannot offer reliable statistics based on students' or institutions' progress performance in relation to the objectives and improvement activities based on such results are unlikely to promote proposed aims, according to the report (Webb et al., 2007).

According to Fuchs et al. (2007), the evaluation that is in line with the curriculum offers at least three key advantages as it contains a prescribed method for assessing predetermined actions, covers the whole curriculum and conduct exams with constant degree of difficulty. Teachers often instruct students on the material that is being evaluated in this era of accountability. It makes it possible for students to do well on examinations and obtain high grades (Engelland, 2004). As a result, if the assessed curriculum matches the written curriculum, the taught curriculum will undoubtedly be more in line with the written curriculum. According to Engelland (2004), when standards and assessments are well-aligned and complement, instructional alignment should increase, Polikoff (2012) likewise supports this. Contrarily, a curriculum that is not matched with its assessment has a number of drawbacks. Porter et al. (2013) list the following as main disadvantages as it gives teachers confusing messages regarding the material to be taught, the standards' substance is devalued as a result and it is unable to provide teachers with feedback about their instructional attempts to aid pupils in comprehending the desired subject. As a result, a carefully matched and examined curriculum is essential for carrying out educational policy (Polikoff et al., 2011).

National Curriculum-2006 is a National document, available online on the website of Federal Ministry of Education. It is developed by coordination of all stakeholders of education. The field experts are invited from foreign countries to share their valuable inputs to create a flawless national curriculum with a shift of teaching learning modes, from teacher-centered to student-centered based curriculum design (Government of Pakistan Ministry of Education Islamabad, 2006).

Providing students with the tools, they need to integrate successfully into society is one of education's key objectives. As time goes on, society changes. Consequently, teaching and learning are active processes. It is a vibrant practice that alters in response to societal developments (Schulze et al., 2013). As a result, curriculum is continuously examined and updated. The current Biology curriculum for secondary education was created in 2006. The paradigm shift in education from a teacher-centered to student-centered besides the importance of student exposure or engagement with instructors' activities were main drivers for the revision of the prior curriculum created in 2000 (Mahroof & Saeed, 2021). All students were encouraged to increase their potential to become effective learners, self-assured people, responsible citizens, and valued members of society (National Curriculum for Biology, 2006).

NC-2006 of Biology (IX-X) has comprised of twelve chapters (Government of Pakistan Ministry of Education Islamabad, 2006). The content of Biology is divided into 18 chapters (76 topics and 60 subtopics). All these content of 18 chapters is then mainly categorize into 6 sections. The whole content of IX-X Biology is mainly divided into 6 above mentioned sections. The weightage of evaluation of content is also prescribed in NC-2006 for Biology, to be followed by examination departments, as shown in the table below:

Table 1.1
Weightage of Content for Evaluation in NC-2006, Biology, IX-X

S.NO. OF CONTENT SECTIONS	*WEIGHTAGE*
Sec. 1 Topics of Study of life and biodiversity from Chapter 1-3	09%
Sec. 2 Topics of Cell biology from Chapter 4-7	23%
Sec. 3 Topics of Life processes from Chapter 8-13	40%
Sec. 4 Topics of Continuity in life from Chapter 14-15	14%
Sec. 5 Topics of Ecology from Chapter 16-3	06%
Sec. 6 Topics of Application of biology from Chapter 17-18	08%
Total	**100 %**

Research Question

The research question of the study was:

i) To what extent the assessment items followed the content weightage given in National Curriculum-2006 for the assessment of Biology IX-X?
   a- Theoretical assessment
   b- Practical assessment

Research Methodology

Descriptive research design was used in the present study, on the basis of literature review. The quantitative approach was appropriate for this study because the alignment of written curriculum with assessed curriculum was quantified, and described using percentages.

Sample

The sample of the study comprised of:

1- Biology subject-experts (24) were selected using purposive sampling technique (those who qualify the criteria of expert) from six Govt. Girls Higher Secondary School and Colleges. From each institute, 4 subject-matter experts were selected who meet the criteria. With the consent of these respondents, six panels of experts were made.

2- The question papers were also purposively chosen for the years 2015-2019, to avoid the unusual paper developed during and after the covid-pandemic 2019.

3- The whole document of NC-2006 of Biology IX and X was chosen by census sampling technique, to examine thoroughly and cover all aspects related to assessment which are highlighted in National Curriculum-2006 of Biology IX-X.

Data Collection Tool

According to required data and research objective, two research tools were developed by the researcher. The detail of each research instrument is as follows:

Questionnaire

Self-developed questionnaire was designed for class IX and X. Subject experts' panel were requested to read each test item and corresponding intended learning outcome carefully, and then tick (✓) mark to show the degree of alignment between them by using the rating scale from Perfectly Aligned to poorly aligned. The questionnaire consist all the no. of items of 10 question papers of Biology IX and X from academic session 2015-2019. The questionnaire is divided into 4 parts;

- Part-A : Multiple Choice Questions (A1-A60)
- Part-B : Restricted Response Items (B1-B55)
- Part-C : Extended Response Items (C1-C20)
- Part-D : Practical Paper (D1-D10)
  - Questionnaire (Grade IX-X)
    (IX Grade) =145 test items A1-D10
    (X Grade)= 145 test items A1b-D10b
    Total items= 290

Content Analysis Protocol-I

Researcher-made research tool was used. It contained assessment items from Board Test Papers of Biology (IX-X). Against each item, six sections of content (which are recommended in National Curriculum-2006 of Biology IX-X for assessment) are mentioned. Subject-matter experts' panels were requested to examine each test item and then tick (✓) mark its corresponding section of content, as mentioned in National Curriculum-2006 of Biology. It contains all the items of IX and X, combined in single protocol, because in National Curriculum the percentages of content weightage are

given combined for grade IX-X. The content analysis protocol consist items, as same, discussed earlier in Questionnaire.

For pilot testing, 4 subject-matter experts other than sample were requested to respond and suggest, for the improvement of the tools. Their suggestions were welcomed and incorporated.

The 290 test items, of five years test papers, were aligned with intended learning outcomes mentioned in National Curriculum-2006, to validate the test items, using Questionnaire.

Reliability was tested through Cronbach's alpha in SPSS. For the purpose of reliability of the questionnaire, the researcher checked internal consistency of the items by applying Cronbach's Alpha, using SPSS and it indicated 0.84 value of reliability, which is good.

For data collection, each panel was separately guided by the researcher, with basic information and purpose of the research instruments. One at a time, each research tool was explained and the time period of 1 week was given to the panels for responding with mutual discussion. Tables were used to present the collected data. By using percentages, matrices with the same order are created and using the mathematical techniques of comparing the data cell by cell from the two sets, the degree of alignment was quantitatively assessed. Content Analysis Protocol-I was analyzed, using several mathematical formulas to calculate the percentages. Each test paper of Biology IX-X was yearly analyzed, according to the six sections of content weightage mentioned in National Curriculum-2006. The data collected by research instruments was analyzed and presented using percentages and tables. The researcher assured the protection of the participants of the study by considering the research ethics.

Results and Analysis

The data analysis and the interpretation of collected information is presented in following tables;

Table 1.2 Categorization of Content Weightage in Marks for Biology IX-X Paper (2015)

MARKS ALLOCATION OF IX-X	**NO. OF ITEMS BIOLOGY PAPER 2015**		**SECTIONS OF NATIONAL CURRICULUM-2006 OF BIOLOGY**					
	Items of Class-IX	**Items of Class-X**	**1**	**2**	**3**	**4**	**5**	**6**
PART-A (12 + 12 marks)	A1-A12 (12)	A1b-A12b (12)	5	7	7	3	1	1
PART-B (32 + 32 marks)	B1-B11 (11 items with choice of 3)	B1b-B11b (11 items with choice of 3)	20	12	20	8	4	
PART-C (21+ 21 marks)	C1-C4 (4 items with choice of 1)	C1b-C4b (4 items with choice of 1)	10.5	10.5	7		10.5	3.5
PART-D (10 + 10 marks)	D1-D2 (2)	D1b-D2b (2)	5	5	5	5		
Total Marks=150	**75**	**75**	**40.5 27%**	**34.5 23%**	**39 26%**	**16 11%**	**15.5 10%**	**4.5 3%**

Table 1.2 shows the content weightage of Biology IX-X test papers of Abbottabad BISE administered in the academic session of 2015. The section 1 contained 27% content weightage, section 2 contained 23% content weightage, section 3 contained 26% content weightage, section 4 contained 11% content weightage, section 5 contained 10% content weightage and section 6 contained 3% content weightage of the paper.

Table 1.3 Alignment of Content Weightage mentioned in National Curriculum-2006 with Biology IX-X Test Papers, 2015

SECTIONS OF NC-2006 (IX,X) BIOLOGY	**CONTENT WEIGHTAGE IN NC-2006 (IX,X) BIOLOGY**	**CONTENT WEIGHTAGE IN TEST PAPERS OF BIOLOGY IX-X**	**ALIGNMNET DIFFRENCE**
Section-1	**9%**	**27%**	**67.3% More than Prescribed**
Section-2	**23%**	**23%**	**100% Fully Aligned**
Section-3	**40%**	**26%**	**35% Less than Prescribed**

Section-4	**14%**	**11%**	**22% Less than Prescribed**
Section-5	**6%**	**10%**	**40% More than Prescribed**
Section-6	**8%**	**3%**	**62.5% Less than Prescribed**

Table 1.3 shows that Biology paper 2015 has fully followed content weightage of section-2 only, of the curriculum whereas 67.3 % more content of section-1, 40 % more content of section-5, 35 % less content of section-3, 22 % less content of section-4, and 62.5 % less content of section-6 than prescribed in Curriculum, has been included in the paper.

Table 1.4 Categorization of Content Weightage in Marks for Biology IX-X Paper (2016)

MARKS ALLOCATION OF IX-X	**NO. OF ITEMS BIOLOGY PAPER 2016**		**SECTIONS OF NATIONAL CURRICULUM-2006 OF BIOLOGY**					
	Items of Class-IX	**Items of Class-X**	**1**	**2**	**3**	**4**	**5**	**6**
PART-A (12 + 12 marks)	A13-A24	A13b-A24b	4	4	10	1	3	2
PART-B (32 + 32 marks)	B12-B22 (11 items with choice of 3)	B12b-B22b (11 items with choice of 3)	12	12	24	8	4	4
PART-C (21+ 21 marks)	C5-C8 (with choice of 1items)	C5b-C8b (with choice of 1items)		14	10.5	10.5	7	
PART-D (10 + 10 marks)	D3-D4	D3b-D4b	10		5	5		
Total Marks=150	**75**	**75**	**26 17.3%**	**30 20%**	**49.5 33%**	**24.5 16.4%**	**14 9.3%**	**6 4%**

Table 1.4 shows the content weightage of Biology IX-X test papers, of Abbottabad Board of Intermediate and Secondary Education, of the year 2016. The section 1 contained 17.3% content weightage, section 2 contained 20% content weightage, section 3 contained 33% content weightage, section 4 contained 16.4% content weightage, section 5 contained 9.3% content weightage and section 6 contained 4% content weightage of the paper.

Table 1.5 Alignment of Content Weightage mentioned in National Curriculum-2006 with Biology IX-X Test Papers, 2016

SECTIONS OF NATIONAL CURRICULUM-2006 BIOLOGY IX-X	**CONTENT WEIGHTAGE IN NATIONAL CURRICULUM-2006 BIOLOGY IX-X**	**CONTENT WEIGHTAGE IN TEST PAPERS OF BIOLOGY IX-X**	**ALIGNMNET DIFFRENCE**
Section-1	**9%**	**17%**	**47.1% More than Prescribed**
Section-2	**23%**	**20%**	**13% Less than Prescribed**
Section-3	**40%**	**33%**	**17.5% Less than Prescribed**
Section-4	**14%**	**16.4%**	**14.6% More than Prescribed**
Section-5	**6%**	**9.3%**	**35.4% More than Prescribed**
Section-6	**8%**	**4%**	**50% Less than Prescribed**

Table 1.5 shows that Biology IX-X paper 2016 has content weightage 4.71 %, 14.6% 35.4% respectively of section-1, section-5 and section-4, more than prescribed in the curriculum whereas content weightage 13%, 17.5% and 50% respectively of section-2, section-3 and section-6, less than prescribed in the curriculum has been included in the paper.

Table 1.6 Categorization of Content Weightage in Marks for Biology IX-X Paper (2017)

MARKS ALLOCATION OF IX-X	NO. OF ITEMS BIOLOGY PAPER 2017		SECTIONS OF NATIONAL CURRICULUM-2006 OF BIOLOGY					
	Items of Class-IX	Items of Class-X	1	2	3	4	5	6
PART-A (12 + 12 marks)	A25-A36	A25b-A36b	2	6	7	4	2	3
PART-B (32 + 32 marks)	B23-B33 (11 items with choice of 3)	B23b-B33b (11 items with choice of 3)	16	16	12	16		4
PART-C (21+ 21 marks)	C9-C12 (with choice of 1items)	C9b-C12b (with choice of 1items)	7	14	14		3.5	3.5
PART-D (10 + 10 marks)	D5-D6	D5b-D6b		10	5	5		
Total Marks=150	**75**	**75**	**25 17%**	**46 30.6%**	**38 25.3%**	**25 16.6%**	**5.5 3.6%**	**10.5 7%**

Table 1.6 shows the content weightage of Biology IX-X test papers, of Abbottabad Board of Intermediate and Secondary Education, of the year 2017. The section 1 contained 17% content weightage, section 2 contained 30.6% content weightage, section 3 contained 25.3% content weightage, section 4 contained 16.6% content weightage, section 5 contained 3.6% content weightage and section 6 contained 7% content weightage of the paper.

Table 1.7 Alignment of Content Weightage mentioned in National Curriculum-2006 with Biology IX-X Test Papers, 2017

SECTIONS OF NATIONAL CURRICULUM-2006 BIOLOGY IX-X	CONTENT WEIGHTAGE IN NATIONAL CURRICULUM-2006 BIOLOGY IX-X	CONTENT WEIGHTAGE IN TEST PAPERS OF BIOLOGY IX-X	ALIGNMNET DIFFRENCE
Section-1	**9%**	**17%**	**47.1% More than Prescribed**
Section-2	**23%**	**30.6%**	**24.8% More than Prescribed**
Section-3	**40%**	**25.3%**	**36.5% Less than Prescribed**
Section-4	**14%**	**16.6%**	**15.6% More than Prescribed**
Section-5	**6%**	**3.6%**	**40% Less than Prescribed**
Section-6	**8%**	**7%**	**12.5% Less than Prescribed**

Table 1.7 shows that Biology IX-X paper 2017 has content weightage 4.71 %, 24.8%, 15.6% respectively of section-1,2 and 4, more than prescribed in the curriculum whereas content weightage 36.5%, 40% and 12.5% respectively of section-3, 5 and 6, less than prescribed in the curriculum has been included in the paper.

Table 1.8 Categorization of Content Weightage in Marks for Biology IX-X Paper (2018)

MARKS ALLOCATION OF IX-X	NO. OF ITEMS BIOLOGY PAPER 2018		SECTIONS OF NATIONAL CURRICULUM-2006 OF BIOLOGY					
	Items of Class-IX	Items of Class-X	1	2	3	4	5	6
PART-A (12 + 12 marks)	A37-A48	A37-A48b	3	3	10	5	1	2
PART-B	B34-B44	B34b-B44b	10	18	20	8		8

(32 + 32 marks)	(11 items with choice of 3)	(11 items with choice of 3)						
PART-C (21+ 21 marks)	C13-C16 (with choice of 1items)	C13b-C16b (with choice of 1items)	3.5	7	17.5	10.5	3.5	
PART-D (10 + 10 marks)	D7-D8	D7b-D8b	10		5	5		
Total Marks=150	**75**	**75**	**26.5 17.6%**	**28 18.6%**	**52.5 35%**	**28.5 19%**	**4.5 3%**	**10 6.6%**

Table 1.8 shows the content weightage of Biology IX-X test papers, of Abbottabad Board of Intermediate and Secondary Education, of the year 2018. The section 1 contained 17.6% content weightage, section 2 contained 18.6% content weightage, section 3 contained 35% content weightage, section 4 contained 19% content weightage, section 5 contained 3% content weightage and section 6 contained 6.6% content weightage of the paper.

Table 1.9 Alignment of Content Weightage mentioned in National Curriculum-2006 with Biology IX-X Test Papers, 2018

SECTIONS OF NATIONAL CURRICULUM-2006 BIOLOGY IX-X	CONTENT WEIGHTAGE IN NATIONAL CURRICULUM-2006 BIOLOGY IX-X	CONTENT WEIGHTAGE IN TEST PAPERS OF BIOLOGY IX-X	ALIGNMNET DIFFRENCE
Section-1	**9%**	**17.6%**	**48.8% More than Prescribed**
Section-2	**23%**	**18.6%**	**19.1% Less than Prescribed**
Section-3	**40%**	**35%**	**12.5% Less than Prescribed**
Section-4	**14%**	**19%**	**26.3% More than Prescribed**
Section-5	**6%**	**3%**	**50% Less than Prescribed**
Section-6	**8%**	**6.6%**	**17.5% Less than Prescribed**

Table 1.9 shows that Biology IX-X paper 2018 has content weightage 48.8 % and 26.3% respectively, of section-1 and section-4, was more than prescribed in the curriculum whereas content weightage 19.1%, 12.5%, 50% and 17.5%, respectively of section-2, 3, 5 and 6, less than prescribed in the curriculum has been included in the paper.

Table 1.10 Categorization of Content Weightage in Marks for Biology IX-X Paper (2019)

MARKS ALLOCATION OF IX-X	NO. OF ITEMS BIOLOGY PAPER 2019		SECTIONS OF NATIONAL CURRICULUM-2006 OF BIOLOGY					
	Items of Class-IX	**Items of Class-X**	**1**	**2**	**3**	**4**	**5**	**6**
PART-A (12 + 12 marks)	A48-A60	A48-A60b	6	4	7	3	3	1
PART-B (32 + 32 marks)	B45-B55 (11 items with choice of 3)	B45b-B55b (11 items with choice of 3)	16	16	20		8	4
PART-C (21+ 21 marks)	C17-C20 (with choice of 1items)	C17b-C20b (with choice of 1items)	7	10.5	10.5	3.5	10.7	
PART-D (10 + 10 marks)	D9-D10	D9b-D10b		10	5	5		
Total Marks=150	**75**	**75**	**29 19.3%**	**40.5 27%**	**42.5 28.3%**	**11.5 7.6%**	**21.5 14.3%**	**5 3.3%**

Table 1.10 shows the content weightage of Biology IX-X test papers, of Abbottabad Board of Intermediate and Secondary Education, of the year 2019. The section 1 contained 19.3% content weightage, section 2 contained 27% content weightage, section 3 contained 28.3% content weightage, section 4 contained 7.6% content weightage, section 5 contained 14.3% content weightage and section 6 contained 3.3% content weightage of the paper.

Table 1.11 Alignment of Content Weightage mentioned in National Curriculum-2006 with Biology IX-X Test Papers, 2019

SECTIONS OF NATIONAL CURRICULUM-2006 BIOLOGY IX-X	CONTENT WEIGHTAGE IN NATIONAL CURRICULUM-2006 BIOLOGY IX-X	CONTENT WEIGHTAGE IN TEST PAPERS OF BIOLOGY IX-X	ALIGNMNET DIFFRENCE
Section-1	**9%**	**19%**	**52.6% More than Prescribed**
Section-2	**23%**	**27%**	**14.8% More than Prescribed**
Section-3	**40%**	**28.3%**	**29.25% Less than Prescribed**
Section-4	**14%**	**7.6%**	**45.7% Less than Prescribed**
Section-5	**6%**	**14.3%**	**58% More than Prescribed**
Section-6	**8%**	**3.3%**	**58.75% Less than Prescribed**

Table 1.11 shows that Biology IX-X paper 2019 has content weightage 52.6 %, 14.8% and 58% respectively, of section-1, section-2 and section-5, was more than prescribed in the curriculum whereas content weightage 29.25%, 45.7% and 58.75%, respectively of section-3,4 and 6, less than prescribed in the curriculum has been included in the paper.

After data analysis, the findings were explained as follows;

1. The Biology IX-X paper 2015 has followed content weightage of section-2 only, whereas other 5 sections didn't follow the content weightage as prescribed in National Curriculum-2006. (Table 1.3)
2. The Biology IX-X paper 2016 has not followed the content weightage of six sections, as prescribed in National Curriculum-2006. (Table 1.5)
3. The Biology IX-X paper 2017 has not followed the content weightage of six sections, as prescribed in National Curriculum-2006. (Table 1.7)
4. The Biology IX-X paper 2018 has not followed the content weightage of six sections, as prescribed in National Curriculum-2006. (Table 1.9)
5. The Biology IX-X paper 2019 has not followed the content weightage of six sections, as prescribed in National Curriculum-2006. (Table 1.11)

It was found that the content weightage of test papers in Secondary School Board Examinations of the session 2015, only 2 sections are aligned with National curriculum-2006 of Biology. While in remaining test papers of the sessions 2016-2019, all 6 sections of each academic session was misaligned with the written curriculum. Each year presents different content weightage regarding the sections of National Curriclum-2006.

Conclusion

The percentages of six sections of content as mentioned in National Curriculum-2006 of Biology IX-X, didn't match with the percentages of content included in Board test papers of 2015-2019. The test paper developers neither follow the National Curriculums' prescribed percentages for assessment, nor do they have their own specified plan for content weightage, about what should be added and how much should be added in the evaluation. For each year, the Board test papers have different content weightage. These findings support the previous studies (Shah & Tariq, 1986; Rehman, 2004; Naeem Ullah, 2007; Faize, 2011) and they concluded that exams promoted rote learning and lacking in accurate content representation. It showed that the items at the section level were not distributed properly. In previous studies of curriculum alignment, carried out on the test papers administered by Punjab Boards, by Mahroof and Muhammad Saeed (2021) were also misaligned. In Khyber Pakhtunkhwa, recent alignment studies were carried by Saher and Najam-ul-Kashif (2020) , Gulzar

and Nasir Mahmood (2019) all these studies explore the alignment of curriculum standards and assessments, textbooks and curriculum standards, student learning outcomes of textbook with assessment. They all indicate misalignment. Similarly, Saher and Najam-ul-Kashif (2020) undertaken the study to gauge how well the textbooks in Khyber Pakhtunkhwa, were aligned with National Curriculum-2006, and results found not to be at the necessary degree of alignment. The current study, concluded that there was clearly misalignment of assessment with National Curriculum-2006 of Biology IX-X, regarding content weightage. In National Curriculum, separate weightage for practical and theoretical assessment, was not mentioned. So, the researcher was unable to find the alignment of content weightage separately for practical and theoretical assessment. The main factor accountable for the critically misaligned test papers of Biology-IX-X with written curriculum was the Boards of Intermediate and Secondary Education of Khyber Pakhtunkhwa. It was recommended that BISE must assist the paper setters with instructional manual or guide for content selection as mentioned in National Curriculum-2006 along with prior trainings of designing assessments at secondary school level by incorporating the guidelines provided in National Curriculum. A committee should be made by BISE, who analyze the test papers thoroughly developed by educational experts for secondary school examinations, in every context of alignment with NC. Once the test paper is evaluated by the committee only then it should be permissible to be administered for secondary school examinations by BISE. It was recommended that National Curriculum- 2006 should also be revised as the content weightage is not specifically provided for theoretical paper and practical paper separately.

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