Integrated Teacher Education Curriculum: A Delphi Study

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ABSTRACT: Teacher education has continued to remain a matter of apprehension over the decades for all the concerned educationists and committees on education. Different curriculums are in vogue in the country for teacher education. NCFTE (2010) stressed on the introduction of an improved curriculum which will enable the students to face the challenges of 21st century. Exploring into the different aspects and dimensions of curriculum for teacher education, the paper tries to underline the concept and need of integrated course in the present context. There are a number of programmes with different structures for teacher education that serve the purpose of producing quality teachers for better education. Integrated course for pre-service teacher education, a teacher education programme structure, provides a curriculum with dual purpose i.e. pedagogy and content, with the duration of four years to transact. The paper critically analyses the present integrated course run in one of the Regional Institutes of Education. The integrated course critically analysed is the B.Sc.B.Ed. course of RIE, Bhopal.

Key Words: Delphi study, teacher education, integrated curriculum, models for integrated curriculum

Introduction

Role of a teacher in a student’s life cannot be measured in terms of words; therefore, one can estimate the value of teacher education, the root of a teacher preparation in present context. Today, worldwide, the main challenge faced by the teaching profession is both, one of numbers and other of quality. Post-independence, India as well has been in the line of other countries with respect to teacher education. The crux of the entire process of teacher education lies in its curriculum, design, structure, organization and transaction modes, as well as the extent of its appropriateness. Teacher education derives its content from the disciplines of Philosophy, Sociology and Psychology but pedagogy dominantly connects them all for the purpose of better education of a child.

Established in 1961, the National Council of Educational Research and Training set up in 1963 five institutions as Regional Institute of Education (since 1995), formerly Regional College of Education, located at Ajmer, Bhopal, Bhubaneswar and Shillong. The Regional Institutes were started with main objective of qualitative improvement of school education through innovative pre-service and in-service teacher training programmes and relevant research, development and extension activities. The institute runs a four-year B.Sc.B.Ed. Integrated course which this study intends to critically analyse for the purpose of integration in the teacher education curriculum. Several committees such as ‘The Chattopadhyaya Committee Report (1983-85)’, ‘The Yashpal Committee Report (1993)’, Review Committee appointed by NCERT in 2006, have noted and pointed out the quality of these programmes for teacher preparation.

“The content of the programme should be restructured to ensure its relevance to the changing needs of school education. The emphasis in these programmes should be on enabling the trainees to acquire the ability for self-learning and independent thinking.” Repeatedly, other documents such as NCF(2005), NCFTE(2010) have referred to these reports while drawing the curriculum for education and teacher education. The B.Sc.B.Ed. courses of RIEs are known as integrated course.

Meaning of Integration

The word “integrate” is derived from the Latin word ‘integrare’ which means to make whole or renew. Other definitions of integration include “to join as to form a larger, more comprehensive entity,” and “to blend, harmonize, synthesize, arrange, incorporate, unify, coordinate, and orchestrate”.

“Integrated curriculum is an approach to learning that consciously blends and applies content from more than one discipline to better examine a central theme, issue, problem, topic, or experience and encourages “disciplinary contamination” where subjects are integrated and interrelated to address relevant issues of current time and context.” (Integration as defined by International Council for Higher Education in ‘An Introductory Guide to Integrated Course Design’ published in 2007 Pg. No. 2)

This idea of integration has been conceived in terms of its application to the course as an integrated course. Thus, an integrated curriculum should move towards a new concept with the blend...
of its main components. Components are Foundational knowledge which is the understanding and remembering of key information and ideas associated with a subject or topic, applied knowledge where students learn how to use the content to engage in critical thinking, creative projects, and learn practical skills, and integrated knowledge where integration examines the connection between ideas, self, and society. Thus, from these three components of knowledge, a foundation for the integrated course has been derived.

Models to Integrate Curriculum

Fogarty (1991) identified ten ways to integrate curriculum as she describes and illustrates graphically ten ways that educators may integrate curriculum. These approaches to integration run a spectrum: From approaches housed within a specific discipline to those that involve integration within learners themselves. The ten approaches include:

1. The Fragmented Model: A traditional approach to curriculum where each discipline is taught separately from the others. Metaphor: Viewing the curriculum through a periscope—one image at a time.

2. The Connected Model: Connections are overtly made between topics taught within one discipline. Metaphor: Opera glasses used to view two images at once.

3. The Nested Model: Students look at various related aspects of the content they are examining. In addition to working with CAD in a computer lab, for example, students might also consider ways to design computer chairs that are more ergonomically friendly. Metaphor: Russian nested dolls.

4. The Sequenced Model: Distinctive content is taught separately but sequenced in a way that ties the pieces together. Metaphor: Eyeglasses: content is viewed through separate lenses but held together by a common frame.

5. The Shared Model: Areas where content overlaps allows for shared planning and presentation of content. Metaphor: Binoculars: Two content areas are studied together to create a combined picture of content. (The graphic used to accompany this looks like a Venn diagram where the combined picture is the area of overlap.)

6. The Threaded Model: This model threads thinking skills, social skills, study skills, graphic organizers, technology, and multiple intelligences approach to learning throughout all disciplines. Metaphor: Magnifying glass that “magnifies all content through a meta-curricular approach”.

7. The Webbed Model: Content in various content areas is taught thematically with the theme being used as a tool to connect content between the disciplines. Metaphor: Telescope that allows learners to see across the span of something at one time.

8. The Integrated Model: Here teachers identify the possible connections between content. Metaphor: “kaleidoscope where interdisciplinary topics are arranged around overlapping concepts and emergent patterns”.

9. The Immersed Model: With this model, learning takes place within students themselves in connection with content they focus on. Fogarty compares this model to one where there are graduate students who are immersed in a particular study and are constantly seeking answers to research questions associated with that study. Metaphor: Microscope where learners view content through their lenses of personal interest and expert.

10. The Networked Model: Learners direct the integration of content drawing on resources “within and across areas of specialization”. Metaphor: Prism that creates several dimensions “and directions of focus”. A second metaphor used in the discussion is a conference call.

These models have been compared while observing the integration of the course.

Approaches of Integration

Defining integrated curriculum has been a topic of discussion since the turn of the 20th century. Integration seemed to be a matter of degree and method. In separate locations, three approaches can be defined to integration—multidisciplinary, interdisciplinary, and transdisciplinary.

1. Multidisciplinary approaches focus primarily on the disciplines. Teachers who use this approach organize standards from the disciplines around a theme. Following figure explains the approach:
There are many different ways to create multidisciplinary curriculum, and they tend to differ in the level of intensity of the integration effort. The adjacent descriptions outline different approaches to the multidisciplinary perspective.

2. In interdisciplinary approach to integration, teachers organize the curriculum around common learning across disciplines. Following figure explains the approach:

![Fig. 2](image)

They chunk together the common learning embedded in the disciplines to emphasize interdisciplinary skills and concepts. The disciplines are identifiable, but they assume less importance than in the multidisciplinary approach.

3. In the transdisciplinary approach to integration, teachers organize curriculum around student questions and concerns. Following figure explains the approach:

![Fig. 3](image)

Students develop life skills as they apply interdisciplinary and disciplinary skills in a real-life context. Two routes lead to transdisciplinary integration: project-based learning and negotiating the curriculum.

Disciplinarity, multidisciplinarity, interdisciplinarity and transdisciplinarity are like four arrows shot from but a single bow: knowledge. As in the case of disciplinarity, transdisciplinary research is not antagonistic but complementary to multidisciplinary and interdisciplinary research.

**Understanding Transdisciplinary Approach**

Transdisciplinarity is nevertheless radically distinct from multidisciplinarity and interdisciplinarity because of its goal, the understanding of the present world, which cannot be accomplished in the framework of disciplinary research. The goal of multidisciplinarity and interdisciplinarity always remains within the framework of disciplinary research. If transdisciplinarity is often confused with interdisciplinarity and multidisciplinarity (and by the same token, we note that interdisciplinarity is often confused with multidisciplinarity) this is explained in large part by the fact that all three overflow disciplinary boundaries. This confusion is very harmful to the extent that it hides the different goals of these three new approaches. The three pillars of transdisciplinarity – i.e. multiple levels of Reality; the logic of the included middle; and complexity – determine the methodology of transdisciplinary research; they emerge from the most advanced contemporary sciences, especially from quantum physics, quantum cosmology and molecular biology.

In view of the different comments/opinions/reactions of the different committees and commissions on the integrated courses of the RIEs, mentioned earlier, it is needed to examine the course from the point of view of integration. Therefore, the present study was undertaken.

**Objective of the Study:**

1. To critically analyse the B.Sc. B.Ed., Four Year Integrated Course in respect of its integration to determine the essentials of an integrated course for teacher education.

2. To study the relevance of the integrated course for teacher education as per the present context.

**Research Questions:**
1. Is the B.Sc. B.Ed. – Four Year course of RIE, Bhopal integrated for teacher education?

2. Is the structure of the teacher education course relevant to present context?

Delimitations of the Study:

The study was conducted under the following constraints:

1. Study was limited only to the B.Sc. B.Ed. Four-Year integrated course, carried out in Regional Institute of Education, Bhopal.

2. The syllabus introduced in 2008-09 onwards was considered for the study. This syllabus was published in the year 2008.

3. The relevant tools were administered to limited expert/students/respondents who were the concerned stakeholders in the present study.

Methodology

Content analysis method was employed for analysing the syllabus prescribed for the course. Delphi technique was used to elicit the responses of the experts as well as students. Delphi method is a systematic forecasting method that involves structured interaction among a group of experts on a subject. The Delphi Technique typically includes at least two or more rounds of expert answering questions and giving justification for their answers, providing the opportunity between rounds for changes and revisions. The multiple rounds, which are stopped after a pre-defined criterion is reached, enable the group of expert to arrive at a conclusion. In-depth interviews, discussions and telephonic interviews had been conducted with experts and focus group discussions were held with the students. Only, the syllabus of one institution, i.e., RIE, Bhopal was analysed for the present study. Data were triangulated involving different sources of information in order to increase the validity of a study.

Sample

To collect the information/data related to the study, the purposive sampling technique was employed for the study. Sample was selected from the present faculties of the RIE, the retired faculties of RIE, and the students of VI and VIII semester (2012-13) B.Sc.B.Ed. students.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Respondents</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
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<tr>
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<td>5</td>
<td>15</td>
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<tr>
<td>2.</td>
<td>Rtd. Faculties</td>
<td>4</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>VI Sem Students</td>
<td>2</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>4.</td>
<td>VIII Sem Students</td>
<td>2</td>
<td>19</td>
<td>21</td>
</tr>
</tbody>
</table>

Table -1: Gender-wise Distribution of Sample

Sample for Expert

In order to select expert, the teaching experience has been the crucial criterion for the sample. Thus, for the expert opinion and feedback 19 expert have been selected with purposive sampling which also include retired professionals and experienced faculties from the field.

Sample for Focus Group Discussions

In order to conduct the focus group discussion, only VIII semester and VI semester students have been randomly selected. The first group was limited to 14 students of VIII semester of CBZ specialised stream, the second group had 6 students of VI semester of PCM specialised stream, the third group had 6 students of VI semester of CBZ specialised stream and the fourth group had 7 students of VIII semester of PCM specialised stream.

Tools Used

1. Criterion-based content analysis proforma
2. Questionnaire: For expert
3. Focus group guidelines: For the students
4. Questionnaire: For the students

Tools were developed by the researcher only with expert advices and suggestions.

Data Interpretation, Result and Discussion

Tools are administered to the respondents in rounds as per the Delphi technique. In the round-1, seventy-nine percent of the experts found some sort of integration and twenty one percent denied that. The percentage went up to eighty-nine percent in the second round and denial for integration remained eleven percent. There was an emphatic refusal from those who refused for the integration for the further round.
Experts were of the view that the faculties used to integrate the course by following the inter-disciplinary approach. The course has a good structure as viewed by 63% of the experts. Duration of the course is 4 years which is sufficient to develop the requisite teaching skills and content knowledge as viewed by 94% of the expert. Sixty-eight percent experts agreed that pre-internship and internship programme was sufficient for the development of requisite teaching skills whereas 32% disagreed. There were 53% of the respondents who stated that education part was taught throughout the course in all the semesters in an integrated manner whereas, 47% accepted that the teaching was integrated. Seventy-four percent experts were of the opinion that the course was capable of producing specialised teachers with respect to PCM and CBZ.

Content Analysis

Four criteria were decided to analyse the syllabus, in order to study the integration. Firstly, the curriculum should be an approach to learning that consciously blends and applies content the two concerned discipline (Science and Education) to better examine a central theme, issue, problem, topic, or experience, essentials of a science teacher and encourages “disciplinary contamination” where the concerned disciplines are integrated and interrelated to address relevant issues of current time. Secondly, availability of an interdisciplinary team to deliver the integrated idea of the curriculum was essential. Thirdly, the course objectives, foundational, application and integrated and actions related to them, was one of the essential criteria. Fourthly, the mode of assessment for the realisation of the course objectives mentioned was another criterion.

In the ordinance and courses of studies, the content of the science and education disciplines were mentioned one after the other in a segregated manner. It was also same with respect to duration, content and assessment. In the Education section, three papers ‘Teaching of Physical Science’, ‘Teaching of Biology’ and ‘Teaching of Maths’ are an effort in Education part that gives an impression that ‘integration’ can be expected here. But to a great extent, these papers dealt with the methodology relevant to the teaching of the science. These covered all the aspects related with the teaching of science content in a comprehensive manner and impressively state the relevance of these methodologies.

Focus Group Discussion with Students

It was found that the students were more appreciative of the experienced faculties as they blend the course in a more practical and applicable manner. A wide difference in opinion between the two specialised streams of PCM and CBZ was observed. The PCM students of VI and VII semester did not see the course as integrated whereas CBZ students of VI and VII were in view of integration. Thus, fifty-one percent of these stakeholders as students agreed with the integration whereas forty-nine percent oppose the notion. But, this conclusion is as good as 50-50. Here, an interesting observation was that the discussions had clearly divided the groups into two straight groups of PCM and CBZ of VI and VIII semester.

Conclusion

Objective wise conclusion is as below:

Integration in the Four Year Integrated B.Sc.B.Ed. Course for teacher education:

1. The course is not integrated with respect to its content in the syllabus for the curriculum.
2. As per the experts’ opinion, the course is integrated (90%).
3. The experienced faculties are working hard to make it integrated in their practice.
4. As per the opinion of the students of Biological Science group, the course is integrated.
5. As per the opinion of the students of Physical Science and Mathematics group, the course is not integrated.
6. Inexperienced faculties find the integration part difficult in the absence of the pedagogical knowledge which was experienced by the students pursuing the course.
7. The course needs to be more systematic and organised towards the integration following the approaches of Inter-disciplinary and Transdisciplinary model for integration.

Relevance of the Course in Present Context

The purpose and call for moving towards an integrated course design stems from the relationship between the classroom and the increasingly complex world of today. Trends towards global interconnectedness, the increase in pace and complexity and the rapid expansion of knowledge have brought with these mounting concerns over classroom relevancy and the lack of connections between education and real-world issues.

1. The course under study is very much relevant with the need of the hour. The strength and weaknesses of the course has been mentioned in the documents of NCERT and other national Committees’ reports but that can be worked upon to overcome the weak part of the course to make it more relevant in present context.
2. Students viewed that those who want to pursue teaching profession for them the course is relevant as it strengthens the command over content and develops the pedagogical skills for the effective transaction of the contents.
3. Experts viewed that the present course is relevant to the context. But, it would be better if some modifications incorporated in the syllabus and practice. The suggestions for modifications are given below.
   a. “Integration is not possible in every area of content but wherever possible it should be properly demonstrated to the students and modules on this may be got prepared. There is a scope of improvement in the core training and internship training.”
   b. “Strengthen the pedagogy part keeping the Science component as it is as the students must have the command over the content.”
   c. “The course is providing students with all the required skills and knowledge but provide them with more exposure to other areas.”
   d. “This course must have content-cum-methodology paper to make it integrated.”

Suggestions

It has been suggested that though the course is a model for other pre-service teacher education to follow but there is a huge scope for its improvement and update. Curriculum can be redesigned and named keeping in view its objectives and output i.e. to produce science teachers in the end and not to produce science and education graduates.

Some suggestions of the study are as follows:

1. Name: As observed and compared to NCFTE (2010) and course name as in RIE, Mysore, the course name itself should be B.Sc.Ed. i.e., Bachelor of Science Education and not making the segregation in the name itself as B.Sc.B.Ed. An integrated course needs to refine its objective and name with certain novelty instead of carrying the essence of the two disciplines.
2. Study Material: The course should provide some study material along with the references it gives for integrated curriculum. Due care and attention should be given to integration while making the study material for the course. Elements of science component need to be identified to make the integration possible with the education component so that a specialised study material of the integrated course can be prepared keeping in view the need of the curriculum. Thus, special study material and thereon relevant course content can be prepared to enhance the quality of the course.
3. Inter-disciplinary Team: As per the criterion for an integrated course, an inter-disciplinary team can be prepared to bring the desired results. An inter-disciplinary team can be constituted to administer, manage, and assess the course. Internship and core-training is the backbone for the course that trains its students for future teaching of science. These trainings should be managed and improvised with the help of an inter-disciplinary team.
4. Model and Approach of Integration: Presently, Fragmented and to some extent Threaded model, concepts given by Fogarty (1992) explained in the first chapter in the sub-content ‘Meaning of Integration’, is followed by this course for its deliverance but the Integrated and Sequenced models are required with clubbing the trans-disciplinary approach to the course. The internship of the course
aims to provide its students with life-skills of teaching in a school environment with trans-disciplinary approach of integration but, largely, the faculties are unaware of this approach which can also be practiced while content mastery and pedagogical learning. The course objective and requirements call for of an Integrated, Sequenced, and Shared model for its achievement of the same.

5. **Recruitment**: There is a felt need that to deliver the course, the professionals of the course should possess an integrated degree in the same field or must have Education degree that is required to teach an integrated course or primarily an pre-service teaching course as expressed by expert respondents of both the departments.

6. **Miscellaneous**: The course needs some fundamental changes to bring integration in the course. There is much scope for improvement in the course. The curriculum is made integrated by the expert delivering the courses who have been dealing with day to day transaction in the classroom. Two specialised streams CBZ and PCM have responded in contrast to each other as the faculties differ between the two: one taught by those who have been in this field of integrated course of teacher education for many years and are experienced, second are those who are specialised in the content but not in Education. It has been reflected by expert respondent as well as by students in their opinion. Course can be looked upon as a model after it is improvised with some study material, exposure to more practice and necessitated changes as it has much relevance in the present context.

Thus, the course is not only relevant but need of the hour too in the wake of universalization of education, but it is not the blend of the two disciplines that contaminate each other; instead two disciplines have been put together in the four year duration of the course in which education part has been massively curtailed in its significance.

**References**


