

## Use of Wrap-Around Material in ODL: An IGNOU Case Study

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### Abstract

With rapid change in society, the requirements for employability are also changing very fast. So, it is necessary for academic institutions to keep up with these changes and make appropriate revisions in the curriculum. However, the design and development of Self Learning Materials (SLMs) in Open and Distance Learning (ODL) requires considerable time and other resources. In the recent times many agile design models for developing course material for distance education are available. The wrap-around model of material development, although fairly old, is considered as a fast and flexible content development model. In this model, the quality of the content is not compromised. This article shares the experience of the Mathematics Faculty in School of Sciences, IGNOU, which used this model of course development in its master's programme.

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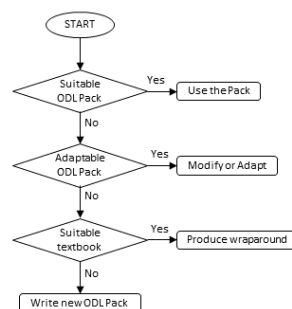
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### Introduction

Open Universities world over use Self Learning Materials as tools of instruction. These SLMs are self-contained and self-explanatory to the extent possible because the learners must do self-study and may not have access to references unlike the students in the conventional system. The SLMs have been the mainstay in ODL system. However, the development of self-learning material in ODL has always been a challenging task which involves subject experts from in-house as well as from outside the institution. For example, according to Freeman, (Freeman, 2005),

- Producing a new ODL course from scratch, particularly in well-established ODL institutions, can take from two to three years.
- It is costly to produce ODL due to the time and money spent on writing, reviewing, revising, editing the material and all these steps are essential. The cost is justifiable only if there are a large number of students. Preparing course material for small enrolment courses negates the advantage of cost that an ODL course has.

One model that is seen as an optimal process of course development in terms of both time and cost is the wrap around model. Freeman gives a flow chart to make a decision regarding producing course material.



**Fig. 1: Flow chart (Source:(Freeman, 2005))**

Fred Lockwood, (Lockwood, 2017) describes the wrap-around model as follows:

*When books, articles and other printed or audiovisual materials are already in existence they can be adopted as core material and **wrap around**(emphasis Lockwood's) texts written to create a self-instructional teaching package. Creating high-quality self-instructional material can be an expensive and time-consuming task, especially if the number of learners is relatively small. If published materials already exist that can be drawn upon, this can offer an extremely effective and efficient way of assembling teaching material, especially if the existing published material represents the vast majority of the study material.*

Wrap-around model has been accepted worldwide and has been defined and used in different ways. According to (Mason, 2001), the wrap-around model has two elements, namely tailor-made materials (study guide, activities and discussion) and existing materials (Textbooks, CD-ROM resources or tutorials). The tailor-made materials support the use of existing materials. However, according to this model, students spend half their time in online interactions and discussions and the remaining half of the time in existing materials. For this reason, Mason calls this as the 50/50 model. His model favours a resource-based approach to learning. The students have more freedom and also the responsibility to interpret the course for themselves. The tutor's or teacher's role is also extensive because less of the course is pre-determined and more is created each time the course is delivered, through the discussions and activities.

According to Som Naidu (Naidu, 2006) the wrap-around model uses study materials, which may comprise online study guides, activities and discussion “wrapped” around existing previously published resources such as textbooks or CD-ROMs etc. This model is also a resource-based approach to learning in the sense that it uses existing material that is relatively unchanging and is already available online or offline. After development, such courses can be taught or tutored by persons other than the course developers. This involves collaborative learning activities in the form of group work, discussion among peers, and online assessments. The process is supported by computer conferencing or mailing lists. He also makes the point that, quite often, these online learning elements tend to be added to the course and do not form an integral part of the assessment requirements of the course.

In (Richards, 2016), Dennis Gaspard Richards discusses the experience of developing course material in the wrap-around format. The University at West Indies, Open Campus had funding under a project that was available for a limited period. They had to develop 200 online courses in two years. Out of this, seventy-three courses were to be developed in the first year. The remaining courses were to be developed in the second year at even more rapid pace. They used wrap-around material to expedite the course development. According to Richards,

*“For the wrap-around, focus (was) on use of specific chapters from a published textbook or e-books; use of links to web based resources prepared by diverse authors to introduce a variety of perspectives and experiences; greater concentration on learning activities that engage students and provide a real world, authentic context (work or life experiences), for their interpretation of the course; facilitating an approach to learning that placed greater responsibility on the learners to choose from a variety of resources including multimedia, that are suited to their learning styles.”*

Regarding the advantages of their development model,

*“The reliance on existing OER sources such as OpenStax, Saylor, Boundless, the OER Commons, and MERLOT meant that the SMEs (Subject Matter Experts)<sup>1</sup> were not re-inventing content. Instead, they were refocusing and re-inventing the learner experience with the content. This left more of the limited course development timeline for focus on creating authentic learning activities that drew more closely from the SMEs real-life experience and practice in the field. The curriculum development teams were therefore able to work closely with them to establish authentic examples and non-examples. The use of templates served to further focus the content development process.”*

In (Lockwood, 2017) the history of creation of the course H521 has been shared as given below:

*When the Open University decided to produce H521, ‘Producing an Open Learning Package’ (Open University, 1991) it was tempting to assemble teachers and trainers into a course team to pool their expertise and generate a multimedia teaching package. ... Fortunately, the Open University was able to identify academic staff who could review existing materials, suggest ways in which they could be supplemented, and identify a member of staff who could assemble the study guide to wrap around the existing materials. The actual production of H521 was based upon a previously published text of (Rowntree, 1991) and supplemented by other teaching materials. ... ‘H521 Producing an Open Learning Package’ was assembled by a single author in a period of five months - a period which also included piloting the draft material with trainers in industry (trainers who eventually contributed their comments on the audiotape that was part of the teaching package). It represented a quantity of teaching material that would normally have taken a small team of academic staff two years to assemble. The major benefits were that high-quality teaching material could be assembled extremely quickly and at low cost. ...*

In Indira Gandhi National Open University (IGNOU), an Open and Distance Learning University, the discipline of mathematics had been offering all its mathematics courses in self learning material form till 2008 mainly up to undergraduate level. The programme Master of Science (Mathematics with Applications in

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<sup>1</sup>Course writers in IGNOU parlance.

Computer Science), M.Sc. (MACS) has been offered by IGNOU from 2008. The history of the programme and the motivation for offering the programme is already documented in (Venkataraman S., 2020). The interested reader may refer to this article for further detail.

In this article, we explain the reasons for opting for the wrap-around model. We discuss our experience, and the feedback collected using unstructured interviews, while adopting the wrap-around model of course development in print form. The unstructured interviews were conducted in person as well as through email from stake holders such as the Programme Facilitators, Assistant Coordinators at Programme Study Centres, Academic counsellors of various courses and learners enrolled in the programme. In the end, we give our conclusions and recommendations based on our study.

### **Objectives of the Study:**

- To share the issues and challenges faced by the Mathematics Discipline Group in creating the course materials of the Masters in Science (Mathematics with applications in Computer Science) (M.Sc. (MACS)) programme in the wrap-around format.
- Explore the effectiveness of this model based on the feedback from various stake holders.
- Identify the shortcomings in the implementation of the model in the programme and recommendations for overcoming them.

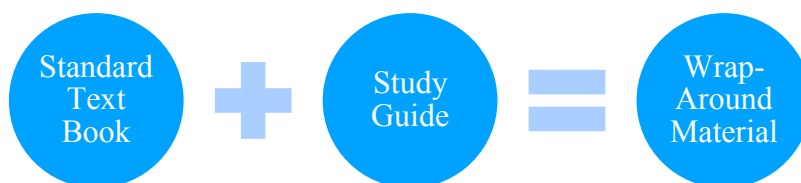
### **About the M.Sc. (MACS) Programme**

The Mathematics Discipline group finished developing the Mathematics electives and the Application Oriented Courses for the Bachelor's Degree Programme (BDP) in 1998. It was thinking of launching a postgraduate level diploma programme that dealt with some of the application areas of Mathematics.

The main objective of the programme is to impart Mathematical knowledge along with its applications in Computer Science. M.Sc. (MACS) is worth 64 credits and includes theoretical, practical and project component. Two type of print materials are used for the programme, namely Self Learning Material and wrap-around material. The programme is on offer at seven centres, Delhi, Ranchi, Kolkata, Chennai, Cochin, Pune and Jabalpur. The enrolment is limited to 25 per centre except Delhi, where enrolment is 55.

### **The Wrap-Around Model and Reasons for Adopting the Model**

At the time of design and development of courses, it was decided that some of the courses would be created in the form of wrap-around material. In our case a textbook was selected and sent to the learners along with a Study Guide.



The model discussed here does not provide for interaction through mailing lists or any other online channel although some support was given using teleconferencing with one-way video and two way audio. The only support is in the form of the counselling. So, the model envisaged in (Du, 2009) is closest to the model we followed. In (Richards, 2016), web links to a variety of resources, apart from text books and e-books, were used. We have always been wary of giving web links because of the transient nature of the material. So, we didn't make large scale use of web resources. In one case where external resource was used, a chapter from a book, the course coordinator obtained permission from the author and the material was incorporated as a part of the material with due acknowledgement of the source.

The Study Guide was to help the students in going through the book by:

- Specifying the chapters and sections from the book to be studied.

- Giving self-check exercises which are needed as part of formative assessment in the open and Distance Education; such exercises are usually missing from the standard textbooks.
- Giving selected exercises, with solutions, from the textbook.
- Providing extra explanation by anticipating the problems that a student is likely to face while studying the book.
- Giving more examples to help the students understand the material better.
- This programme, catering to the applications part mostly, was to be developed and the wrap-around model was adopted in some of the courses of the programme. The model adopted was similar to what has been described in (Du, 2009). According to (Du, 2009), this model involves a textbook and Study guides or workbooks that 'wrap-around' a particular textbook which provides the bulk of the information students require for that subject.

It was felt that the wrap-around mode of developing course material is desirable because of cost effectiveness, faster development and greater acceptability. To elaborate on these points, it was felt that:

- As mentioned before, if the new material is written/developed from scratch, it might take 2-3 years to develop a course, specially at Master's level, in a well-established ODL system like IGNOU. The course material could be developed faster using the wrap around format.
- While comparing the cost of development of wrap-around study material and material produced from scratch, it is evident that the wrap-around material would be cost effective because there is a considerable saving in payment to course writers, etc. Another reason was the limited enrolment to the programme.
- Adopting books that are used worldwide for teaching comparable courses will be advantageous to the students because the faculty from other academic institutions will be able to relate to the course better because of familiarity with the book. This will lead to greater acceptance of students.

Having decided to use wrap-around material for some courses, in the expert committee meetings held for the design of these courses, the experts were requested to recommend books based on the following criteria:

- It is desirable that the book recommended has wide acceptance and used for teaching similar courses all over the world.
- A cheap Indian edition should be available for the book.
- The book should cover at least 70% of the curriculum.

Regarding the design of the wraparound material, we decided to largely stick to the format used in Self Learning Materials and make them minimal changes that were necessary. This is because we were using SLM format for some of the courses for which resource persons were readily available and we didn't want to depart radically from the format because this could affect the comfort level of the students. Accordingly, the study guide prepared by the programme team has the following format: In the first page there is a structure as in traditional SLMs. It also includes a list of chapters referred to in the text.

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## UNIT 1 GROUP OPERATIONS

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Structure	Page No.
1.1 Introduction	7
Objectives	
1.2 Group Actions	7
1.3 Conjugacy Classes	13
1.4 Summary	13
1.5 Solutions/Answers	14

Sections in Arin's book related to this unit:

Chapter	Section
5	5, 6 and 7
6	1 and 3

Fig. 2: Structure with References to the Prescribed Book

This is quite similar to the format used in SLMs except for the listing of the chapters and sections.

The students were guided through specific portions of the prescribed book.

Study Guide-I



Read Section 5 of Chapter 5 from the book.

Let us now look at some examples that illustrate the notion of group action (or as Artin calls them, group operations).

**Fig. 3: Study instructions**

The material also had clarifying notes and corrections to some of the errors in the book:

**NOTE** Please correct equation (5.3) on page 177.  
The equation should be

$$O_s = \{s' \in S \mid s' = gs \text{ for some } g \in G\}$$

◇◇

**NOTE** Please refer to page 177, lines 9–11.  
Note that, since a rigid motion preserves length, it preserves the lengths of the sides of a triangle. So, it maps a triangle to a congruent triangle.

◇◇

**Fig. 4: Clarification and Correction**

We included some self check exercises as is customary in Self Learning material.

- E2) Find the stabilisers for the following elements under the action given:
- Stabiliser of the vector  $\mathbf{e}_1 = (1, 1, \dots, 1)^t \in F^n$  under left multiplication by elements in  $GL_n(F)$ .
  - Stabiliser of the element  $\begin{pmatrix} 1 & 1 \\ 0 & 0 \end{pmatrix} \in M_2(\mathbb{R})$  under left multiplication by elements in  $GL_2(\mathbb{R})$ .
- E3) Which of the actions amongst b) and c) in Example 1 are transitive? Give reasons for your answer. Describe the orbits under the action given in b), Example 1.

**EXERCISES**

**Fig. 5: Self Check Exercises**

In addition, we also included some selected exercises from the book with solutions.

**After finishing Sec. 5, try exercises 2, 4, 5 and 9 in page 192 of Artin's book under the heading '5. Abstract Symmetry: Group Operations.'**

**EXERCISES**

### The Experience of the Programme Team

The programme was launched in 2008 and the learners were provided with wrap-around in some courses and self-learning materials in some other courses. One of the authors of this article was a counsellor at the Delhi centre of the programme for both types of courses, both with wrap-around course material as well as Self Learning Materials. He got sporadic feedback from the students that the students found it more difficult to negotiate wrap-around material as compared to self-contained SLMs. To get more systematic feedback, unstructured interviews of the programme facilitators, assistant coordinators of various centres and academic counsellors of various courses at various programme centres were conducted, through purposive sampling, during the orientation programmes for counsellors, conducted recently. Members of the programme team visited four out of seven centres with significant enrolment in M.Sc. (MACS) programme. The team visited Programme centres in Delhi, Pune, Kolkata and Cochin. Since the counsellors of the programme from the Chennai centre were called to orientation programme in Cochin, the programme team was able to interview them also. In some of the centres, the programme team met some students also and was able to get feedback about the wrap around material.

The problems with this model started with the purchase of the books. Initially, the Material Production and Distribution Division (MPDD) of IGNOU was entrusted the task of purchasing the books. Due to procedural reasons, there was considerable delay in procuring the books. So, the students could not be supplied the books in time.

It was found that the difference between the time taken to develop SLM and wrap-around was not significant. The time saved in switching to wrap-around was therefore not significant.



It was also found that the format is not as flexible as the usual Self Learning Materials. It binds the material developers to a particular approach and a particular sequence of presentation. A teacher in the classroom situation, even if the teacher decides to follow a particular book, can always use an approach different from the book in some parts of the course if needed. For example, she can present a proof of a result that is different from the book. Although it is possible to do so in the Study Guide, there is a limit to such deviations because too much of deviation defeats the purpose of the wrap around material.

In the case of wrap-around material, the course developers have to follow the same sequence of presenting the topics that is followed in the textbook. Even if the course developers want to change the sequence for pedagogical reasons, this was not possible. The printed copies of the books were provided to the students and too much rearrangement of the material through comments alone was not possible. Merely changing the order without taking care of continuity of the text was not possible.

The course writers were not familiar with this format and this caused many problems. The material produced by the course writers were not in the required form. One of the course writers felt that it is piracy to use the textbooks in spite of our assurance that we would be buying the books from the publishers.

One of the authors did counselling for some of the courses for which wrap-around material was prescribed. The students also struggled a lot with this format. The general feedback regarding this format was that it is very tedious to switch between the Study Guide and the textbook.

Also, the students, at the undergraduate level, are used to textbooks which are, often, little more than glorified guides. They contain no motivation. The books by foreign authors take a different approach. For example, in some of the books, instead of stating the theorem and presenting the proof afterwards there is a discussion and the theorem is stated afterwards. This motivates the results better, but the students in Indian environment have problems with this style in the prescribed textbooks. They find it difficult to follow the argument and this affects their understanding of the proof of the theorem and examples and exercises that follow because the ideas and concepts used in the discussion are also used in these.

Some of the books used for wrap-around material were revised frequently. The Study Guide could not keep pace with the revision always. Because of this, students faced problems when the chapters, sections and exercise numbers mentioned in the Study Guide did not match the revised textbook sent with the guide.

Also, Indian editions of the books were purchased online by people in the western countries since they were considerably cheaper even after taking delivery charges into account. This caused considerable loss to the publishers. Because of this the publishers are increasingly reluctant to put out Indian Editions. In one case, the University could not buy a prescribed book in bulk from the local Indian publishers who were putting out Indian reprints because it was prohibited by the International Partner. The only way to buy this title was online. For the same reason, there is a real possibility that the publishers may stop publishing Indian Editions. Indeed, one of the major publishers of books in Mathematics has already stopped printing Indian Editions. (However, this did not affect us because no book published by this publisher was prescribed in the programme.)

To deal with the problem of unauthorised online purchase of books, some of the publishers have also started putting out Indian editions with some chapters removed from the original international edition and exercises changed. Again, this affected some of our courses.

The pricing of the books is very opaque and this has led to audit objections earlier in the case of purchase of books in Computer courses. So, the University is not in favour of this model and it needs considerable effort to get permission for purchase of books.

The programme team chose some standard textbooks for which International Student editions were available at an affordable price. The price is usually in American dollars and this has the potential of causing problems due to fluctuation in exchange rate. This did not happen in our case because we had deliberately limited the student enrolment. But there is a distinct possibility of disruption of all financial calculations due to this factor, particularly if the number of copies purchased is large.

## **Recommendations and Conclusion**

The reaction of the students and counsellors to the wrap-around material, obtained from counsellors and students through purposive sampling carried out, was surprising. It was hoped that, since the students have been using standard textbooks in their undergraduate studies, they will find themselves in familiar grounds in using wrap-around material. It was thought that the students might appreciate the extra material provided in the textbooks that will let them go beyond the syllabus. Also, it was felt that the books would be a part of the collection of books that will be useful in their further studies and career. However, the feedback was not in line with the expectation of the programme team when it designed the programme. Based on the interaction with the stakeholders and the experience in maintaining these courses the following are our recommendations.

A better way of implementing wrap-around material will be to ask the publishers to provide textbooks, customised specially for the IGNOU courses. This is not a new idea. During the study, while exploring the various alternatives, it was found that many Universities have been doing this in engineering courses where there is a large enrolment and it is cost effective for the publisher to put out customised versions of their books. However, this is not possible in the case of M.Sc. (MACS) programme because of the limited enrolment in the programme.

In the M.Sc. (MACS) programme, the course team decided to procure the books for two reasons:

- The discount availed in bulk purchase will help in reducing the cost of the programme, thus benefitting the learners.
- At the time of launching of the programme, online sales of books had not taken off and the students in some of the smaller towns would have found it difficult to purchase the books.

However, at present, there are many companies that sell books online and there is competition in pricing also. Also, the students can buy used books at a cheaper rate or borrow the book from a library or from friends or relatives. So, it may be better to supply only the study guide and allow the student to make her own arrangements for the book. This arrangement would also substantively bring down the fees charged for the programme and free the programme team the additional burden of procuring books.

Based on the difficulties the programme team faced in getting good resources for wrap around material, it would be desirable to have a compulsory licensing system where permission could be obtained for reproducing selected portions of the book after paying a prescribed fee to the publisher. This fee could be regulated by the government. In this case the change in editions would have little impact. The disadvantage is, of course, the programme team may not be able to make available the latest material to the students, but there will be considerable stability. There would be no problems when books go out of print for one reason or another.

With plenty of Open Education Resources (OER) available, a better option could be to use these materials instead of the materials published by the commercial publishers. One reason is that such resources are provided free of cost. A more important reason is that these Open Education Resources could be customised to suit the need of our students. So, they provide more flexibility than the standard textbooks.

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