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**The implementation of NotesMaster as a learning platform for Secondary Education -A case of the  
Namibian College of Open Learning,**

**by**

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**Abstract**

The Namibian College of Open Learning (NAMCOL) is a Government funded educational institution that provides study opportunities to adults and out of school youth. NAMCOL has adopted the Notesmaster platform as a learning portal for its secondary education programme. In response to UNESCO Open Educational Resources (OER) Paris Declaration of 2012, all NAMCOL eLearning resources for open schooling are released under CC BY SA on Notesmaster platform.

Over the years a range of notes were published on the platform for all subjects on offer. These notes cover subject content at the Junior and Senior Secondary levels. The notes address learning objectives stipulated in the subject area syllabi and focus on content perceived as difficult with additions of audio, video and animations.

In order to ensure that the content is used by learners and tutors, different strategies have been implemented which included face-to-face training, provision of computers with internet connectivity and mentoring, amongst others. The results were not always as expected, but the material is available and used by learners and tutors, which are reflected in statistics in this article.

The article aims to share the NAMCOL experience in using Notesmaster as a preferred platform for OER in open schooling, including experiences of the developers, tutors and learners. Data is gathered from learners, tutors and content developers to assess their involvement and determine to what extent the platform has contributed to their success in teaching and learning.

In documenting and sharing the successes and challenges experienced by NAMCOL, this paper can serve as a valuable resource to any Open Innovative School seeking to implement its own OER development programme and subsequent pilot to stakeholders.

**1. Introduction**

The Namibian College of Open Learning (NAMCOL) and NotesMaster Global started collaborating in 2012 to develop interactive multimedia resources for its Secondary Education Programmes. This partnership led to the creation of the NotesMaster Namibia online learning platform (accessible on [www.notesmaster.com](http://www.notesmaster.com)). Since the introduction of the platform 5776 notes were created in the following Grade 10 and 12 subjects: English, Mathematics, History, Life Science (Grade 10), Biology (Grade 12), Physical Science (Grade 10), Business Studies (Grade 12), Entrepreneurship (Grade 10), Economics (Grade 12) and Accounting (Grade 10). Other learning resources which are available include NAMCOL assignments and MOCK examination papers with memorandums for grade 10 and 12 subjects.

Teachers from formal schools were trained to support NAMCOL's Programme Developers to create the notes. The notes had to include audio and video clips as well as animations where necessary. Notes can only be published once cleared by three peer reviewers, as well as approved by the subject and eLearning programme developers. This is to ensure correctness of content, but also improve the quality of notes.

Over the years NAMCOL has made efforts to get the learning content to teachers and learners in order to ensure that it is used as intended. Awareness sessions were presented to Teachers, Education Officers, Education Directors and Learners. Furthermore teachers and learners were trained in the use of the platform. The content is made available freely and licenced as open educational resources under Creative Commons, CC BY-SA. Therefore, the use of the content is not only focussed on NAMCOL learners and tutors, but also learners and teachers in the formal education system.

This paper analyses data that is gathered from content developers, tutors and learners on their experiences in recent years and on how NotesMaster has contributed to an improved understanding of the learning content as well as

enhanced the learning experience. The notes created on NotesMaster focus on content perceived as difficult or where learners have not fared well in examinations. Therefore, the expectation is that audio, video and animations should improve understanding which could not be achieved with written content. NAMCOL learners receive a full set of study guides for each subject in which they register, thus NotesMaster content is additional.

## **2. Purpose of the Study**

Since the introduction of Notesmaster in 2012, several pilots were conducted to focus on specific areas of the platform, whether it is Development, Tutoring or Learning. Every year training was conducted either to enhance the course writing or to assist Tutors in utilising the learning content better or with Learners to access the platform and use the content to improve their understanding.

This study aims to evaluate the success of all these activities and determine to what extent those who were intended to benefit have actually benefitted and learnt from the interventions. The study also aims to review strategies and determine areas where improvement is required or areas where the College has done well. In this way good practices can be strengthened, while improvements can be made where required.

## **3. Literature Review**

Open Schooling is playing a significant role in the Education Sector to provide equitable access and study opportunities especially to those who cannot gain access to or utilise the conventional learning institutions (Abrioux & Ferreira, 2009). The same authors state that Open schooling involves the physical separation of the school-level learner from the teacher and the use of unconventional teaching methodologies and information and communications technologies (ICTs) to bridge the separation and provide education and training (Abrioux & Ferreira, 2009). Open Schooling provides access to those who would otherwise not have had a chance to complete their secondary education. In a country like Namibia, with limited good quality learning institutions, and a largely scattered population, many learners find it difficult to access conventional institutions. Completion of secondary education can gain them access to tertiary education and provide the potential for an improved quality of life.

The separation from the classroom and teacher in open schooling provide more freedom to the learner, but also requires much discipline and places a higher sense of own responsibility on the learner. This relates to self-directed learning where learners take responsibility for their learning and are able to plan and organize the learning (Len, 2019). Hence, it is important to provide additional support to the learner to ensure that the experience is enhanced and that the learner has the necessary resources to master the learning content.

In the case of NAMCOL, the NotesMaster platform was introduced to expand on the learning experience of the learner and provide additional resources to the print-based learning content through the use of Open Educational Resources (OER). The purpose of adopting OER is to promote equitable access to education, especially to distance learners (Willems and Bossu, 2012). In a vast country like Namibia there is a mismatch between the levels of education in the poor rural communities and those in rich urban communities. Gordecka & Sliwowski (2014) stated that OER can be used to minimise the educational gap and to enhance the quality of education while at the same time ensure the fast-tracking of the flow of knowledge to many people.

In the ODL system, OER adoption is one way to address the ever increasing costs of textbooks that have a restrictive effect on access to education and allow teachers to repurpose content to fit their own context (Makhoe, 2010). Literature has also shown that OER widen access to education without compromising quality (Ozdemir & Hendricks, 2017).

Both print-based resources and the online resources are much needed by learners to provide options for their preferred means of study. This blended learning resources approach combines the best elements of online and print-based material (Watson, 2013). The development and provision of online learning content is key in the ODL mode of study as the learner can interact with the content in different formats, either as e-book, audio, video and animation, to mention some. This makes provision for different learning styles and fills the gap caused by the separation from the class and the teacher.

The online learning platform also provides for the formation of study groups, interacting with the tutor and other learners, sharing of ideas directly with the tutor or in the group and contextualising the content to the learner's environment (Butson & Thomson, 2014). This allows the learners to take responsibility of their own learning and

ensure that the learning experience contributes to an improved understanding of the environment in which they live.

It is however important for the content developers to know and understand the needs of the Tutors and Learners who the content is developed for. If the content is developed, but not utilised by Tutors and Learners it will serve no purpose. This is supported by Liang and Chen (2012, pp. 1333) who state that “No matter how well the instruction is designed, if the learner cannot gain access to the course learning materials via the technology due to physical or financial constraints, the instructional design is rendered useless and non-existent.” Therefore, Tutors should form part of the development process and learners should continuously engage with the content for maximum benefit from it.

The provision of computer devices and Internet connection remain key in the successful introduction of online learning. This has been observed in the tertiary programmes offered online at NAMCOL. If learners don't have the necessary support in terms of devices and internet they rather revert to studying with printed study materials. The same applies to secondary education learners, who still have the printed material available. It becomes easy to fall back to printed study material as soon as challenges arise with technology (Keengwe & Kidd, 2010).

NAMCOL uses blended learning as the distance education mode is combined with face-to-face sessions (Len, 2019) for its secondary education programmes. There is, however, a move away from face-to-face as the contact sessions have been reduced significantly over the last few years. Instead of weekly contact sessions with learners, the College introduced block tuition sessions that are offered over two weeks twice a year. This move was largely caused by a lack of tutor commitment during contact sessions, poor attendance of learners and little correlation between more contact sessions and better performance of learners.

#### **4. Research Methodology**

The target population of this study entails all programme developers and course writers of NotesMaster Namibia, the Tutors and Teachers with learners involved in the programme thus far, as well as the administrators of the programme. This makes a relatively small population, which required the researchers to approach the full population through electronic mail as they were largely scattered.

The initial learner questionnaire (pre-workshop questionnaire) to assess their readiness for online learning was administered to all the learners who attended the training at the time and all 58 responded. A follow up questionnaire (post-workshop) was sent to 120 Learners after they engaged with the NotesMaster content for more than a year and 45 responses were received. The questionnaire for programme developers and course writers was also emailed to all 45 developers who were involved in the programme and 30 responses were received. The tutor questionnaire was sent to 70 Tutors involved in the programme and 39 responded.

Questionnaires were developed on 'Google Forms' and electronically administered, apart from the pre-workshop learner questionnaire. Questionnaires were analysed by 'Google Forms' and charts and tables produced which were summarised and some tables are presented in the next section. Based on the findings from the data collected, conclusions were made on successes and challenges in the NotesMaster implementation. Recommendations were made to address the challenges and build further on the good practices.

#### **5. Data Analysis and Interpretation**

The data is presented as feedback from Learners, Tutors and Content Developers.

##### **5.1 Learners**

The intention with the pre-workshop questionnaire was to assess the readiness of learners to engage in eLearning activities. Out of 58 Learners who took part in this assessment, 66.1% were female and 33.9% were male. This is in line with NAMCOL's general enrolment for Secondary Education, where female enrolment forms two thirds of the total enrolment. The respondents indicated that they have reasonable access to devices like mobile phones and computers, but very limited access to internet (only 6.9%). This is also visible in the low number of learners having accessed learning content on the devices (24.1%). Less than 10% of the respondents have used a learning platform to access content or took part in online chats or discussion forums on a learning platform. It was evident that the learners at the time did not really engage in formal online learning.

The intention with the post-workshop questionnaire was to assess to what extent learners used the NotesMaster platform and whether they found value in it. Out of 45 respondents, 60% were female and 40% were male. During the workshop learners were exposed to the NotesMaster content and online learning. It was a rewarding experience for them and most of them gave positive feedback, in the sense that the platform was easy to access and to navigate. They mostly accessed assignments and MOCK examination questions with memoranda, with a lesser extent accessing content notes and videos. A majority of the respondents experienced a better understanding of the content while even more believed the portal had the potential of increasing understanding of subject content. They indicated that it will lead to improved learner performance in examinations and hence they will recommend it to other learners.

The responses are indicative of the situation that many Secondary School learners in Namibia find themselves in. Although they have reasonable access to computer devices, Internet connectivity is a major challenge. Internet is expensive in Namibia and accessibility is limited, with low bandwidth where it is available. When learners do access Internet, learning material is not a main priority, but accessing social media to chat with friends. This poses a challenge for educators who wish to develop and make learning material available online. Significant efforts have been made at NAMCOL to encourage learners to use the NotesMaster learning platform, but the College has not been able to provide access to Internet to a large scale.

## 5.2 Tutors

The intention was to assess tutors' perception about the online OER on NotesMaster. Out of 39 respondents 30.8% were female and 69.2% were male. The Tutors who engaged with the content had very similar experiences as learners. The overall majority (85.7%) of the respondents found the access and navigation easy.

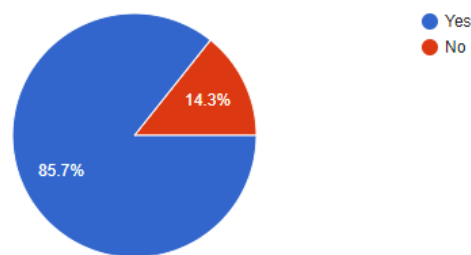


Chart 1: Ease of access and navigation

They had much interest in the assessment activities with MOCK examination questions and memoranda as well exercises high on the priority list. They expressed positive views about the resources having the potential to improve performance in examinations. They also accessed images, videos and illustrations amongst others. In terms of quality of notes and the appropriateness of the learning content to the curriculum the respondents found it useful, very good and enriching. They used the resources mostly for lesson preparations and face to face teaching. Those who find the access and navigation difficult (14.3%) expressed the following challenges:

- The link to the notes redirects to the official website
- The organisation of the notes is cluttered
- My e-mail password is always rejected
- Too many steps
- No access to Internet

This is an indication that only a few challenges were experienced.

## 5.3 Content Developers

The total of 31 subject matter experts consist of a combination of teachers from formal schools (38.7%), retired teachers (9.7%), Education Officers (9.7%) and Instructional designers (9.6%). These comprised of 74.2% female and 25.8% male respondents. They were all appointed on a part-time basis. The Programme Developers from NAMCOL formed 32.3% of this group. The majority of the content development team members had more than 15 years' experience in teaching the respective subjects.

### *Material development and Instructional design experience*

The majority of the respondents had prior experience in developing distance education learning material (print, multimedia and online learning material and assessment) prior to the NotesMaster Project. The majority of the subject team members fulfilled both the role of content writer and peer reviewer, with the exception where teachers were appointed only as a writer or content editor.

### ***Training and Support***

The overall responses on the quality of training and support given to content development teams were very positive. Respondents rated the training on the tools (e.g. materials, skills and techniques) needed to develop notes from very good to excellent. The training on the use of different elements of the NotesMaster platform were also scored from good to excellent. A number of items were rated good to very good which included the NotesMaster manual, training and support provided in terms of script writing and creation of audio video, the support given in terms of image editing and instructional design, as well as the support they received through the peer review comments and quality assurance before publishing.

### ***Confidence Gained***

The following table depicts the confidence gained by the content developers through the process.

<b>Activity</b>	<b>Excellent</b>	<b>Very good</b>	<b>Good</b>	<b>Satisfactory</b>	<b>Poor</b>
How to do the storyboarding (planning) of the note	2	11	9	6	1
Writing scripts for audio and video clips	2	11	10	3	2
Using audacity audio recording and editing tool	3	7	10	6	4
Using open source image editing tool (photofiltre)	4	8	9	5	4
Searching for and evaluating OER	4	10	8	5	3
Creating interactive online notes	4	13	8	4	1

Table 1: Confidence gained by Content Developers

The overall rating for the confidence gained is linked to the quality of the training and support provided to course development teams throughout the development process. Areas where the confidence levels are still low indicate that the respondents need to practice more on the use of the tools. The level of confidence of course teams are also reflected in the different types of notes created on the platform. The notes differed in terms of the use of multimedia elements to make notes interactive where 25% of the notes included text, images, audio, embedded videos, quizzes and hyperlinked content, while 17,9% of the notes created included less multimedia elements.

### ***Platform navigation***

The respondents rated the platform from very good to good in terms of the organisation of the platform, user friendliness and technical support from NotesMaster. The respondents' satisfaction with the overall support from NAMCOL were experienced as very good to excellent. The respondents varied in their ratings in terms of access to internet from good to excellent which have made accessing the platform run smoothly.

### ***Challenges***

The content developers responded as indicated in the following table to possible challenges they experienced in the process.

<b>Responses</b>	<b>Yes</b>	<b>No</b>
Lack of knowledge on how to write distance-learning material	9	21
Computer competency	6	25
Workload	23	7
Access to computers	4	28
Internet access	11	19
Finding relevant OER	11	18
Delays in peer feedback	15	16
Time	26	5
Navigation on the platform	10	21

Table 2: Challenges of Content Developers

Responses showed the major challenges experienced by course development teams were in terms of workload and time. This is a true reflection of the reality since the team members are doing this work in addition to their normal work. Other significant challenges indicated are the delay in peer feedback, finding relevant OER and Internet access issues, which slowed down the content development process.

### Quality of the learning resources

Sixty-one percent of the respondents created between 10 and 50 notes, while the other 39% created more than 50 notes. Seventy two percent of the respondents had between 10 and 50 notes peer reviewed, while 28% had more than 50 notes peer reviewed. This is a positive indication of the success of the training and support provided to the course teams. Respondents strongly agreed that the peer review comments enabled them to improve the quality of the learning resources and that the process has developed their abilities and skills to teach their subjects. The peer review process further assisted them to apply theory to practice and developed their ability to provide constructive critique to others. The screenshot below presents two notes from the platform, one from Economics and the other from English.

**Nature of the basic economic problem (scarcity)**

Watch the video on the right hand side explaining the nature of economic problem.

Write down the definition for economic problem in your own words.

**The basic economic problem arises because economic resources are limited in supply (scarce), whilst human wants are unlimited.**

So we can conclude that the basic economic problem is *scarcity* as illustrated in the image below.

Study the image of scarcity below and use the example illustrated to explain scarcity in your own words.

**Take note:**  
When economists say that something is scarce, they do not mean that it is rare or that only a small quantity is available, they simply mean that there is no enough of it to completely satisfy everyone's wants.  
Click on the following link to read more about [The nature of economic problem.](#)

**References**

1. Episode 2: Scarcity of choice by mjmf00die licensed under CC BY (<https://www.youtube.com/watch?v=1VAJ0GnWae8>)
2. Scarcity: Central Economics Wiki image by FANDOM licensed under CC BY SA. Available from <https://centralecon.fandom.com/wiki/Scarcity>

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Figure 1: Economics note on scarcity

**How to respond to "Yes" and "No" questions**

Some of you might have responded the same as this learner in the same situation.  
What is the question in this comic? What was wrong with the learner's answer?  
**NOTE:** The teacher did not ask why, she just wanted to know whether you have done your homework or not.

"Yes" or "No" questions are also called closed questions because there are only two possible responses, yes or no.

Now look at the same question just asked differently.  
*You have done your homework, haven't you?* ← This type of question is called a tag question.  
Can you see that we have a statement followed by a question?

*A tag question is a statement followed by a mini-question. We use tag questions when we want to check if something is true, or invite people to agree with us.*

Listen to the following audio insert and answer the questions on the right hand side.

1. Does Mom call Ollie very early.
2. The children are worried about their mom's safety, aren't they?
3. Does Mom use the internet to get hold of Ollie?
4. Is Mom is stuck on the Stuart Highway, north of Alice?
5. Mom is starving out in the desert, isn't she?
6. Mom is travelling solo, is she?
7. Ollie's sister kept their mom's contact details safe, didn't she?
8. Mom is in a desert in the middle of Australia, isn't she?
9. The satellite number is not on the fridge, is it?
10. The children can't imagine Mom doing anything else, can they?

Click on the link to download the [Transcript for the Audio Clip](#)

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Figure 2: English Active listening note

## 6. Discussion

The development of online learning content is useful for distance education learners as they can access the content at their own time, while it provides for multimedia to enhance the understanding of the subject matter. However, there are a number of internal and external factors that impact the success of the development of the content as well as the use of the content by Tutors and Learners.

In the case of NAMCOL the development of the content is largely slowed down by the availability of the developers. The institution does not have the resources to appoint full time content developers, hence the majority of developers work on part-time basis. In this way the College has less control over the pace of development. Despite this situation, much success has been achieved and many notes have been created in different subject areas, while the capacity of developers was built through the process. It is evident that the developers gained confidence in storyboarding, script writing, using the online tools and creating notes. The peer reviews assisted in improving the quality of notes and the learning resources in general. The training and support were well received and contributed largely to the success of the project. The types of challenges the developers experienced are not unexpected as they are employed at the College or elsewhere for different tasks and had to perform this function additionally. Hence workload and time featured strongly. They had not all place the same priority and commitment on the tasks thus there were delays in peer reviews which hampered the progress of others.

In the case of Tutors and Learners the general experience was positive. They could access the learning platform and found the navigation easy. This is key in the design of the platform, as difficulties in this area will discourage the users to a large extent. Both the Tutors and Learners experienced improved understanding of the subject matter and believed that the content has the potential to improve examination results. This is essential to note as it is a major achievement of the platform. The multimedia is supposed to provide alternative means of engaging with the content that was only provided in print, but is now available in audio, video and animations. Learners learn differently and hence the variety of media should provide for the different learning styles of the learners. The challenges experienced by the Tutors had much to do with their own ability to use the platform or technical challenges with email or internet. One critique with notes being cluttered is possibly isolated and could easily be addressed. Learners generally have limited access to Internet and it remains a challenge for them to access audio and video that requires much data. In cases where Internet is available the priority is not necessarily accessing learning content, but rather to chat with friends on social media. When Tutors and Learners do access learning content on the platform the priority is on assessment activities. This is common as learning is focussed on preparing for examination.

The resources spent to develop and avail online content will be in vain if the content is not accessed and used by Tutors and Learners. Therefore NAMCOL opted to make the content available as Open Educational Resources (OER) to ensure that Tutors and Learners do not need to pay for the content. The College has taken a strong position on OER thus developed and implemented a policy to guide the development and provision of OER. Hence the NotesMaster resources can be accessed and used for free by anyone around the world. In order to ensure that the platform is known by those it is intended for, the College have organised many awareness sessions with Education Officers, Teachers, Learners and School Principals. In addition the College offered free training to those who wished to utilise the platform in their teaching and learning. This is a process and it is the wish of the institution that the NotesMaster platform will become the preferred learning platform in Namibia.

## 7. Conclusion

The development of the NotesMaster online learning content and its provision as OER is a milestone for NAMCOL and a huge contribution to Open Schooling. This is perhaps the only one of its kind in Namibia as the researchers could not find evidence of a similar project locally.

The value of the learning content and its potential contribution to improved performance in examinations were clearly indicated by the respondents in this study. The content is in line with the national school curricula and there are sufficient assessment activities for Learners and Tutors to engage with. The quality of the notes is high and multimedia adds value to the written content to increase understanding. The access to the portal and the navigation is regarded as easy.

The few challenges that were identified are manageable and can be addressed in the near future. The challenges of content developers are to be addressed by the College especially related to their capacity in developing the NotesMaster content and the provision of computer and Internet access as well as finding OER to use in content development. Issues around workload and time can also be addressed by employing subject matter experts on fixed term contract.

In the case of Learners and Tutors, capacity should be developed continuously to make it easy for them to use the content. The provision of computer and Internet access to all of them might not be easy to address, but the College has already set up computer centres and resource centres throughout the country to support them as far as possible. This is a common goal for the Education sector, hence the College joined hands with other institutions through the Namibian Open Learning Network Trust to widen access for learners. In this way learners also have access to resource centres and hence computers and Internet of other member institutions of the trust. The College has gone a long way in introducing OER in Open Schooling and will have to ensure that Tutors and Learners gain maximum benefit from this investment.

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