

The Implementation of Notesmaster as a Learning Platform for Secondary Education: A Case of the Namibian College of Open Learning (NAMCOL)

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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. This study aims to share the NAMCOL experience, in using Notesmaster as a preferred platform for OER in open schooling, including experiences of the content developers, tutors and learners. Data was 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 could serve as a valuable resource to any Open Innovative School seeking to implement its own OER development programme and subsequent provision to learners and tutors.

Keywords: eLearning, Open Schooling, Open Educational Resources.

Introduction

The Namibian College of Open Learning (NAMCOL) and Notesmaster Global started collaborating in 2012 to develop interactive learning resources for the College's Secondary Education Programmes on the Notesmaster Namibia learning platform (accessible on www.Notesmaster.com). Since the introduction of the platform, 5776 resources, including interactive notes, NAMCOL assignments and MOCK examination papers with memorandums for grade 10 and 12 subjects were published. The content is published as Open Educational Resources under Creative Commons, CC BY-SA license. NAMCOL learners receive a full set of study guides for each subject in which they register, thus, Notesmaster content serves as additional learning resources. The notes created on Notesmaster focus on content that is perceived as difficult or where learners did not fare well in examinations.

Since the introduction of Notesmaster in 2012, several pilots were conducted to focus on specific areas of the platform, including content development, tutoring and learning. Training was conducted either to enhance 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. Teachers from formal schools were trained to support NAMCOL's Programme Developers in creating 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 to improve the quality of the notes.



The content is based on the national curriculum and can be used not only by NAMCOL learners and tutors, but also by learners and teachers in the formal education system. Awareness raising and training sessions were presented to education directors, education officers, teachers and learners to ensure that the content was used as intended.

This study aims to evaluate the success of all these activities and to determine what benefits, if any, accrue. The study also aims to review the Notesmaster implementation strategy 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. Thus, learners and teachers can have an improved learning experience while using the Notesmaster platform. The review process began with a review of the appropriate literature, which is presented in the next section and assists in placing the study in context.

Literature Review

Open schooling involves the physical separation of the school-level learner from the teacher and the use of non-traditional teaching methodologies, and information and communication technologies (ICTs) to bridge the separation and provide education and training (Abrioux & Ferreira, 2009). The separation from the classroom and teacher in open schooling provides more freedom for the learner but also requires discipline and places a higher burden of self-responsibility on the learner. This relates to self-directed learning (andragogy), an approach which recognises that these learners are typically older than day-scholars, where learners take responsibility for their learning and are able to plan and organise their own learning (Len, 2019). It also relates to self-determined learning (heutagogy) where the learners' capacity and capability is enhanced to prepare them well for the modern workplace (Hase & Kenyon, 2007). 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 well.

In the ODL system, incorporating Open Educational Resources (OER) is one way to address the ever-increasing costs of textbooks that have a restrictive effect on access to education and to allow teachers to repurpose content to fit their own context (Makoe, 2010). The literature has also shown that OER has widened access to education without compromising quality (Ozdemir & Hendricks, 2017).

In the case of NAMCOL, the Notesmaster platform was introduced to expand on the learning experience of the learner and to provide additional resources to the print-based learning content through the use of OER. NAMCOL uses the Notesmaster platform to develop learning content for secondary education and make this available for free. The purpose of adopting OER is to promote equitable access to education, especially for distance learners (Willems & Bossu, 2012). 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, 2015). 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, for example, e-book, audio, video and/or animations. This makes provision for different preferences to learning and fills some of the gaps caused by the separation between learners and tutors.

The online learning platform also provides for the formation of study groups, interaction between the tutors and learners, sharing of ideas directly with the tutor or in the group and the contextualisation of content to the learner's environment (Butson & Thomson, 2014). This interaction between the learners, the learners and tutors, and the content allows the learners to take responsibility for 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 for whom the content is developed. 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, p. 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 connectivity remains key in the successful introduction of online learning. This has been observed in the tertiary programmes offered online at NAMCOL. If learners do not have the necessary support in terms of devices and Internet access they rather revert to studying with printed study material only. The same applies to secondary education learners to whom NAMCOL provides study material at enrolment. It becomes easy to fall back to printed study material as soon as challenges arise with technology (Keengwe & Kidd, 2010), even though the additional resources provide focus on problem areas that seem not to be adequately addressed in print. The aim of the OER that are available on Notesmaster is to assist the learner by providing multimedia content to enhance the learning experience and improve understanding of the learning content. Audio, video and animations are used to explain the content more effectively than print allows. If learners don't use the multimedia content they miss out on the opportunity for this improved understanding intended with the multimedia. The next section outlines the methods used in the study.

Methods

This paper analyses data gathered from content developers, tutors and learners on their experiences in the year of the study, and previous years, and on how Notesmaster has contributed to an improved understanding of the learning content as well as enhanced the learning experience.

The survey method was employed for data collection as the population of the study was known to the researchers and also formed part of the implementation of the Notesmaster project. All who were engaging with the Notesmaster platform had email addresses or such addresses were created for them. The email address was required to register and log on to the Notesmaster platform. It was appropriate to email the questionnaires to those involved the project. As also described by Ponto (2015) the survey would be administered through email to provide demographic information of participants and also gauge their opinions on the notes created on the Notesmaster platform. Ponto indicates that "survey research can use quantitative strategies (e.g., using questionnaires with numerically rated items), and qualitative strategies (e.g., using open ended questions) or using both (mixed method)" (Ponto, 2015, p. 168).

In this case, the mixed method was employed as questionnaires with both open-ended and closed-ended questions were administered with a range of participants in the population, namely, content developers, tutors and learners. In this way participants with different roles and different needs could express their opinions on the learning content and its use. Questionnaires were developed on Google Forms and were electronically administered, apart from the pre-workshop learner questionnaire, which was administered in person.

The target population of this study entailed all programme developers and course writers, and the tutors, teachers and learners involved in the programme at the time, as well as the administrators of the programme. This makes a relatively small population (235 in total), which required the researchers to approach the full population through electronic mail as they were largely scattered.

Data collection was done through questionnaires for the following groups:

- Learners (58) who attended a training workshop to prepare them to use the Notesmaster platform. Before they attended the workshop a questionnaire (pre-workshop questionnaire) was administered to determine their readiness for online learning. The questionnaire assessed their experience in using computer and mobile devices, the Internet and email and learning online.
- The second questionnaire to learners was administered about a year later, after they had engaged with the content. In this case more learners were included, apart from the 58 who attended the workshop, as they also used the Notesmaster platform. The questionnaire (post-workshop questionnaire) was emailed to 120 learners and 45 responded. The questionnaire assessed the learners' engagement with the content in terms of ease of access and navigation, what type of content they accessed and the benefits they reaped.
- The third questionnaire was emailed to the 70 tutors involved in the programme and 39 responded. The questionnaire assesses the tutors' views on the quality of the notes, the ease of access and navigation of the platform, to mention a few.
- The last questionnaire was for programme developers and course writers (referred to as content developers) and was emailed to all 45 content developers who were involved in the programme, and 31 responses were received. The questionnaire assessed a range of experiences related to the material development process, instructional design, platform navigation and challenges, amongst others.

The survey results were analysed using Google Forms and an Excel spreadsheet for both quantitative and qualitative data. The responses to the open-ended questions were coded by assigning labels to each response and organising them into categories in line with the description by McCombes (2019). The results are presented in charts, tables and a generic format. Based on the findings from the data collected, conclusions were made on successes and challenges in the Notesmaster implementation. Recommendations are made to address the challenges and build further on good practices. The results are presented in the next section using the categories described above.

Results

The data is presented as feedback from learners, tutors and content developers.

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 responded, 66.1% were female and 33.9% were male — all of those who took part in the workshop. 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 the Internet (only 6.9%). This is also visible in the low number of learners having accessed learning content on their devices (24.1%). Less than 10% of the respondents had used a learning platform to access content or to take part in online chats or discussion forums. It was evident that the learners at the time did not really engage in formal online learning.

The following chart depicts the experiences and activities of 45 learners as they engaged with the platform, based on the post-workshop questionnaire.

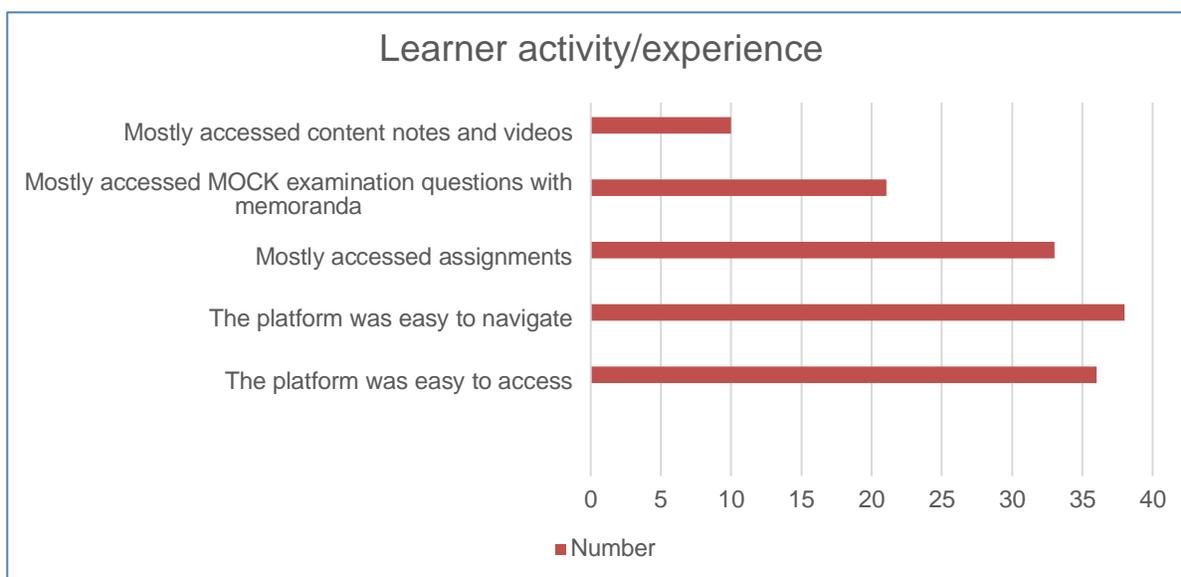


Chart 1: Learner Activities/Experiences

The intention with the post-workshop questionnaire was to assess the extent to which learners used the Notesmaster platform and whether or not they found value in it (see Chart 1). Out of 45 respondents, 60% were female and 40% were male. Respondents indicated that the engagement with Notesmaster was a rewarding experience for them and most of them gave positive feedback, in the sense that the platform was easy to access (80%) and to navigate (84.4%). They mostly accessed assignments (73.3%) and MOCK examination questions with memoranda (46.7%), and only to a lesser extent content notes and videos (22.2%). A significant number of respondents (62.2%) experienced a better understanding of the content while even more believed the portal had the potential of increasing understanding of subject content (84.4%). The learners indicated that the use of the

platform and content will lead to improved learner performance in examinations and, hence, they will recommend it to other learners.

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 (see Chart 2).

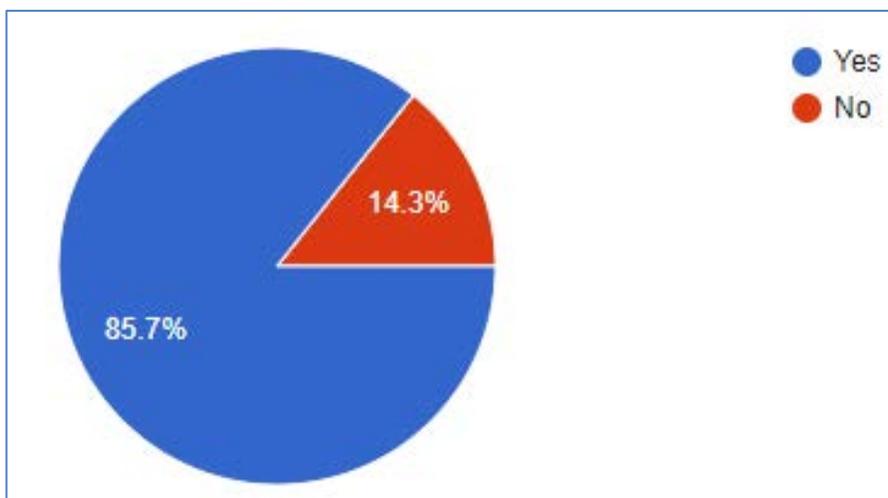


Chart 2: Ease of access and navigation

Tutors had much interest in the assessment activities with MOCK examination questions and memoranda and, as well, exercises were 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 the 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.

Quality of notes

The overall responses by the tutors on the quality of the notes were positive, as indicated in Chart 3 below.

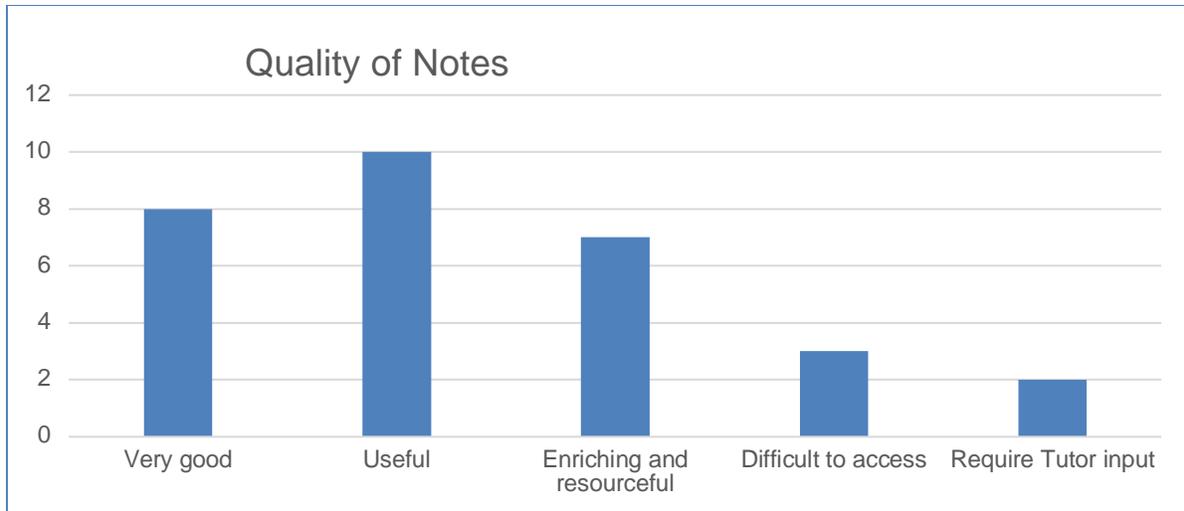


Chart 3: Views of Tutors on Quality of Notes

Respondents describe the learning resources as very good, useful and enriching. Respondents also recognised that some notes are difficult to access and others require tutor input.

Content Developers

The 31 content developers (subject matter experts, in Chart 4) who responded, consist of a combination of teachers from formal schools (38.7%), retired teachers (9.7%), education officers (9.7%) and instructional designers (9.7%). These comprised 74.2% female and 25.8% male respondents. They were all appointed on a part-time basis. The Programme Developers from NAMCOL formed 32.2% of this group. The majority of the content development team members had more than 15 years' experience in teaching the respective subjects.

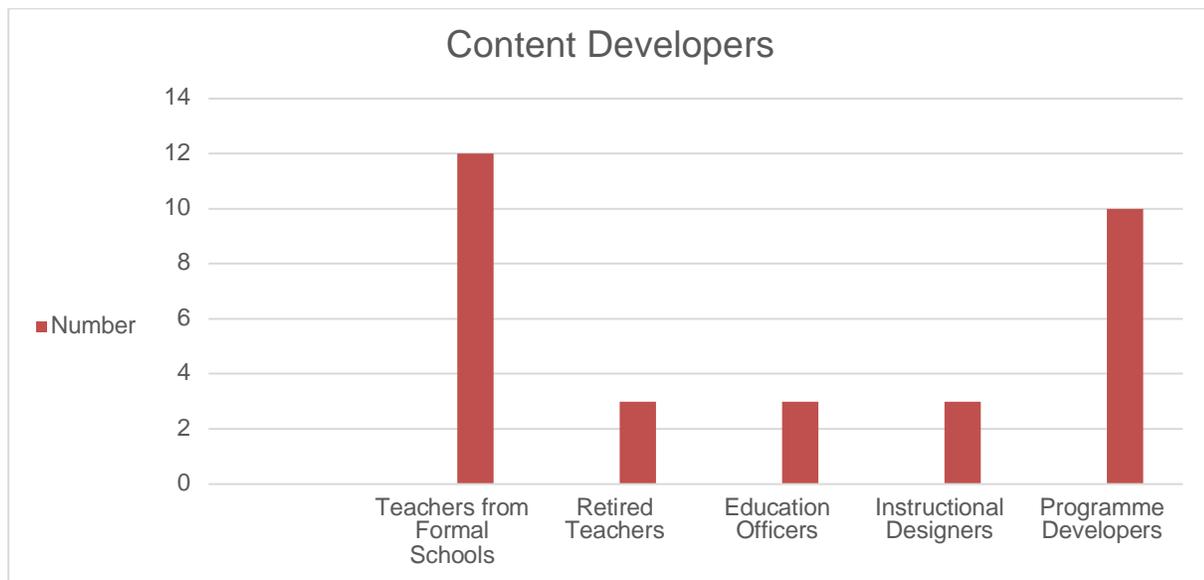


Chart 4: Composition of Content Developers

Material development and instructional design experience

The majority of the respondents had 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 of those teachers who were appointed only as writers or content editors. All teams had a language editor and subject programme developer to assist with quality assurance. The eLearning Programme Developer fulfilled the role of instructional designer and overall quality assesor.

Part of the project was to train the content developers to ensure that all of them understood what the project entailed (see Table 1). They were also informed about the development processes for online learning materials and the content of the Notesmaster training manual.

Training and support (N = 31)

Table 1: Training and Support of Content Developers

Training focus	Excellent	Very good	Good	Satisfactory	Poor
Training on the tools (e.g., materials, skills, and techniques) needed	10	15	4	2	0
Script writing for audio and video	4	8	11	4	0
Creating audio clips	3	9	12	5	1
Image editing	4	10	7	5	1
Screencast videos	1	5	9	7	3
Training on how to search for OER	5	13	5	5	1
Training on use of the different elements of the Notesmaster platform	9	8	10	2	1
Peer review comments	5	13	9	3	1
Instructional design	4	10	11	2	1
Storyboarding	1	7	13	4	1
Notesmaster training manual	3	8	15	3	0
Quality check before publishing notes	5	12	9	1	1

The overall response on the quality of training given to content development teams was 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 scored ratings from good to excellent, whilst the Notesmaster manual was mostly rated good to very good. Respondents regarded the training on how to search for OER mostly as very good.

The overall response on the quality of support given to content development teams was positive. Training and support provided in terms of script writing for audio and video and the creation of audio and videos was rated mostly from good to very good. The support given in terms of image editing was rated from very good to good, whilst the support provided in terms of storyboarding was rated from good to very good. The support in terms of instructional design was rated as good to very good. Respondents rated the support they received through the peer review comments and quality check before publishing the notes as very good to good.

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 was experienced as very good to excellent.

Confidence gained

Table 2 depicts the confidence gained by the content developers throughout the project.

Table 2: Confidence gained by Content Developers

Activity	Excellent	Very good	Good	Satisfactory	Poor
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

The overall rating for the confidence gained could be linked to the quality of the training and support provided to course development teams throughout the development process. Areas where the confidence levels were still low indicate that the respondents needed to practice more on the use of the tools. The levels 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 fewer multimedia elements.

Challenges

The content developers responded as indicated in Table 3 to possible challenges they experienced in the process.

Table 3: Challenges of Content Developers

Responses (31 content developers)	Yes	No
Lack of knowledge on how to write distance-learning material	9 (29.0%)	21(67.7%)
Computer competency	6 (19.4%)	25 (80.6%)
Workload	23 (74.2%)	7 (22.6%)
Access to computers	3 (9.7%)	28 (90.3%)
Internet access	11 (35.5%)	19 (61.3%)
Finding relevant OER	11 (35.5%)	18 (58.1%)
Delays in peer feedback	15 (48.4%)	16 (51.6%)
Time	26 (83.9%)	5 (16.1%)
Navigation on the platform	10 (32.3%)	21 (67.7%)

Responses showed that the major challenges experienced by course development teams were in terms of workload and time. They had the least challenges with access to computers and computer competency.

Quality of the learning resources

Sixty-one percent (61%) of the respondents created between 10 to 50 notes, while the other 39% created more than 50 notes. Seventy two percent (72%) 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 (Figures 1 and 2) 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 not 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 mjmfoodie licensed under CC BY (<https://www.youtube.com/watch?v=1VAJGnWae8>)
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

It is evident that the notes are well designed with colourful pictures and highlighted text. Audio and video clips are embedded in the notes. References are clearly indicated.

Discussion

The development of online learning content is useful for distance education learners as they can access the content in 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 unavailability of the content developers. The institution does not have the resources to appoint full-time content developers, hence, the majority of developers work on a 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.

In the case of both 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 had 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 before but is now available in audio, video and animations. Learners learn differently and, hence, the variety of media should provide for the different learning preferences 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 the Internet. One respondent thought that some of the notes were cluttered and this could easily be addressed by adopting a common template. Learners generally have limited access to the Internet and it remains a challenge for them to access audio and video that requires much data.

The resources spent to develop and avail online learning 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 did not need to pay for the content. The College has taken a strong position on OER and, 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 has 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 an ongoing process and it is the wish of the institution that the Notesmaster platform will become the preferred learning platform in Namibia.

Conclusion and Recommendations

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 was perhaps the only project of its kind in Namibia, at the time, as the researchers were unable to find evidence of a similar project locally.

Although the value of the learning content and its potential contribution to improved performance in examinations were indicated by the respondents in this study, further research is required to determine its impact on examination results. The content is in line with the national school curricula and there are sufficient assessment activities for learners and tutors to engage with. Results indicate that 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, like the ability of tutors to use the platform and technical challenges with email and the Internet, 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 contracts.

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 connectivity 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 the Internet through 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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