

Weathering the storm by using the Rapid Development Prototype model in online course design

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Instructional Design Models

Prototyping

Rapid Development Prototype Model

Chapter in brief

In 2020, higher education institutions (HEIs) globally were faced with a new storm and none were adequately prepared to sail it. As Travis Meadows puts it: "Peace is not found in a calmer storm, it's found in a better boat", so too did HEIs have to look for better "boats" to weather the storm of the COVID-19 pandemic. To rapidly adjust from the traditional face-to-face modes of delivery to online learning, many HEIs had to adopt a model of rapid online course development. The shift to online learning fundamentally altered the environment in which institutions offering distance forms of higher education function – having a knock-on effect on their practices. This chapter provides a brief overview of the Rapid Development Prototype model and the experience of using it in online course design at a Namibian higher learning institution – the University of Namibia. Through the rapid model, instructional designers were better able to deliver the current needs of students at a rapid process to minimise interruptions to their learning.

Introduction

When faced with this new storm of the COVID-19 pandemic, higher education institutions (HEIs) globally had to look for a better "boat" to weather it, none of them were adequately prepared to sail it (Dlamini & Ndzinisa, 2020; Ndzinisa & Dlamini, 2022; Trotter et al., 2022; van Heerden, 2021). As the saying goes "Peace is not found in a calmer storm, it's found in a better boat" (Travis Meadows). Globally, the pivot to online learning during the COVID-19 pandemic reduced the time available for learning designers to produce high-quality online materials and conduct rigorous quality assurance processes (Hodges et al., 2020, Petherbridge et al., 2022). In Namibia, the shift from traditional face-to-face

delivery modes to online learning demanded that the University of Namibia (UNAM) adopt more flexible and rapid approaches to online course development. This shift altered the environment in which UNAM, which also offers distance modes of study, functioned.

The Centre for Innovation in Learning and Teaching (CILT) at UNAM is responsible for supporting distance learning students and for developing print and online materials for the distance and online students at the university. The shift to fully online education in lieu of face-to-face classes had substantive effects on distance education initiatives. Prompted by the shifts to online and cost considerations, the university has since done away with the use of print materials. These substantial changes have required a series of changes in the learning design practice at UNAM. This chapter provides a narrative account of my personal and professional experience as a learning designer who had to transition from the provision of print and digital materials for distance and online courses to materials for online learning, and the changes to the learning design processes to the rapid Development Prototype (RDP) model, the focus of this chapter.

Background of UNAM

UNAM was established in 1992 and it is one of the leading HEIs in Namibia. As part of its mandate, UNAM also serves distance learning students with CILT being primarily responsible for supporting distance learning students, and for developing print and online learning and teaching materials for distance and online students at the university.

Before the COVID-19 pandemic, UNAM embarked on a curriculum transformation process toward a competency-based curriculum which would be more responsive to the needs of the future labour market. During this transformation, eight faculties were merged into four which housed sixteen schools. For the three learning designers at CILT (including myself) who are responsible for creating distance versions of face-to-face courses, this meant that we would have to develop new courses for all approved programmes – a mammoth task in itself! This curriculum transformation was necessary for the survival of the institution and optimum usage of resources and income generation which given the ever-reducing government subsidy had to be operated as a business. However, since the pandemic, the implementation was partially halted and we have had to go back to the drawing board.

Like other African countries, Namibia experiences challenges in terms of internet access and connectivity (Kumar & Strazdins, 2021), particularly in rural and remotely located areas. This specifically impacts students from poor backgrounds. During emergency remote teaching (ERT), unstable electricity provision coupled with unequal and limited access to internet infrastructure posed a great challenge as access to these were the heartbeat of ERT and without this lifeline, students could not access the educational materials online. The issue of equity (Petherbridge, et al., 2022) was once again brought into the spotlight. Lack of access to suitable devices including smartphones, tablets and laptops was an additional obstacle to equitable access to online learning materials.

Staff also experienced difficulties in the transition to ERT. They did not always make use of the technological systems and software provided by CILT and when they did, our existing systems could not always cope with the new demands. Faculty often felt stranded during the course conversion process leading to their increased attendance at our online training sessions. Despite having received the necessary pedagogical training and technical support from CILT, faculty seemed to require additional guidance in fundamental areas such as constructive alignment. CILT used these training sessions as an opportunity to get valuable feedback from our participants. This feedback was then used to improve on our practice including learning materials design. During such training interventions, we also identified new courses or short courses to be rapidly developed for continuous professional development interventions or income-generating training initiatives.

Furthermore, existing mental and physical health disorders were exacerbated affecting staff and students alike. The CILT staff experienced burnout due to the educational demands of multiple online courses and overlapping deadlines as did other learning designers globally (Morgan, 2019). The frequent classes and meetings over Zoom led to burnout in staff and students. Sadly, we also lost some seasoned faculty.

My learning design journey

My history as a learning designer began in my childhood – I have always seen myself as an educator, pretending to be the teacher when I played with my siblings and cousins. This passion transitioned into adulthood. I acquired my formal qualification in education and later my postgraduate degree. My area of interest mainly pertains to educational technology particularly within the open distance and e-learning (ODEL) sector. As a teacher, I developed classroom materials and as a consultant, we developed the curricula for basic education and the technical vocational education and training sector in Namibia. Then I decided to pursue a career as a learning designer. The passion that I had for teaching and materials development was useful since I already had the pedagogical and technical skills required of a learning designer. Being at the forefront of online and print-based materials development meant that I had to possess an understanding of and be able to use various educational tools for learning and teaching. My digital competence level also had to be at a desired level since I was responsible for training other faculty members on how to use various tools. For example, I needed to be skilled using the learning management system, Moodle. I also had to possess a certain “professional aura” and had to possess a positive attitude towards the use of technology. These soft skills proved useful since I had to deal with various people and had to be able to cope with any seen or unforeseen circumstances within learning design and the coordination thereof.

Being a learning designer at CILT has been quite interesting since it allowed me to explore new educational tools firsthand, explore my creative skills and abilities in materials development and interact with various people at different levels of our institution. Before the pandemic, CILT mostly spent its financial resources on the printing of study guides for our distance learning students, some of whom were remotely located or in rural areas with no internet access. CILT was also a pioneer in the national context in piloting and implementing online courses and programmes and providing training to faculty on tools and software such as Moodle, Zoom, and Panopto to name but a few. However, since the pandemic, the university has had to revise its learning and teaching strategy in line with the ERT strategy and guidelines which had to be promptly implemented to minimise the disruption that occurred during the learning and teaching, regardless of their mode of study. CILT’s investment into print-based materials also proved useful during the pandemic since our distance education students could now use print-based materials.

Outlining the UNAM approach to learning design

Although the focus of this chapter is on RDP, it is important to understand that RDP builds on other instructional design models such as ADDIE, Successive Approximation Model (SAM) (Allen & Sites, 2021) and ASSURE (Heinrich & Molenda, 1999). This section will provide a quick overview of some of these instructional design models and the need to consider more rapid models. It should also be noted that instructional design is not limited to the models mentioned within this chapter and I encourage readers of this chapter to explore other instructional design models (Allen & Sites, 2021; Culatta, 2023.; Dousay, & Branch, 2022; Edmonds et al., 1994; Hodges et al., 2020; Instructional Design Central, n.d.; Petherbridge et al., 2022).

Prior to the COVID-19 pandemic, CILT’s learning design approach was mostly based on the ADDIE design model (Branson et al., 1975), a model used widely in Namibia but also globally. ADDIE model is a five step, linear instructional design model. ADDIE is not effective for rapid course development as it is neither agile nor explicitly iterative, leading to design problems detected once each step is concluded. This creates both financial implications and delays in the delivery of the final, quality-assured product. When I joined CILT, the instructional designers (now called learning designers) used the ADDIE model.

In the design and develop phases of ADDIE, learning designers draw on a variety of concepts to make design and subsequently developmental choices. One of these concepts is constructive alignment, a concept widely used in higher education to evaluate the alignment between learning outcomes, learning activities and assessment (Biggs, 1996). I realised that constructive alignment was not thoroughly applied nor adhered to during the quality assurance of newly developed learning materials, particularly the print-based study guides that were issued before the COVID-19 pandemic. The absence of constructive alignment sometimes compromised the quality of the final product, particularly the print-

based study guide. Additionally, this lack of alignment was often only detected in the quality assurance stage which happened after printing. Correcting such poor design through reprints proved costly. Peer reviews prior to printing would have saved time, reduced costs and limited unnecessary effort. Another popular instructional design model is the SAM model, a rapid prototyping model developed by Michael Allen (Allen & Sites, 2021). This model gained popularity in the field in response to the constraint of linearity in the ADDIE model. The SAM model enables rapid revision of content without the lock-step approach of the ADDIE model. SAM enables instructional designers to test their courses early and be agile to revisions based on user feedback.

There are various other instructional design models and often learning designers choose to use a combination of these models in their learning design approach. Regardless of the model of learning design used, there must always be an element of analysis (including constructive alignment), monitoring, evaluation and enhancement which are encompassed within the development process.

Materials development at UNAM

Before the COVID-19 pandemic, our method of materials development was a lockstep, time-consuming process. The development process commenced with a needs analysis, identification of materials to be developed, sourcing and contracting of the subject matter experts (SMEs) which can either be internal or external from UNAM, the materials development process using the ADDIE model and then the quality assurance, approval and publishing process. The process can take six to twelve months for the completion of the development depending on the number of credits for the course and the administration and approval of the contracts for learning materials development which caused frustration for the development team, the institution as a whole and students who desperately needed these materials to successfully pursue their studies at UNAM. Prior to the pandemic, our focus as CILT was predominantly on print-based materials as opposed to the development of online courses since this was the primary market (the distance learning students) that CILT catered to. Due to the highly sequential nature of ADDIE, this model no longer worked under the pressured time constraints of ERT, thus a pivot was needed to design for online.

Towards a Rapid Development Prototype (RDP) approach

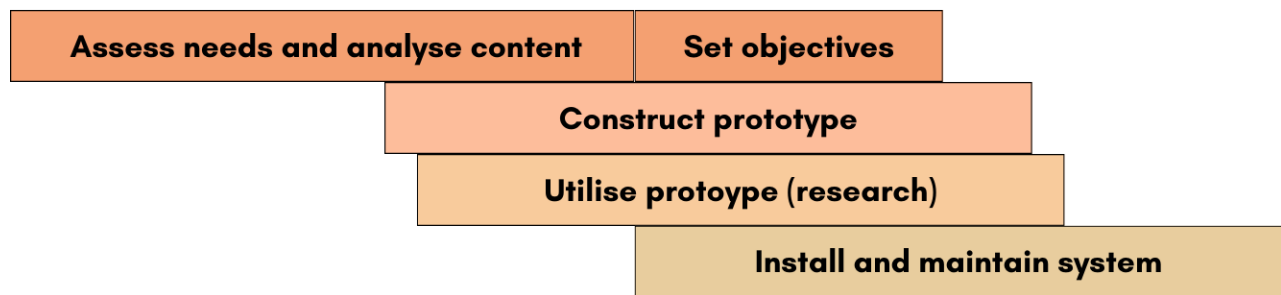
In this section, I discuss the version of the RDP model that we used, how we supported the implementation of RDP and the need to maintain constructive alignment.

Adapting the RDP model

A core model influencing our practice is Tripp and Bichelmeyer's (1990) Rapid Prototyping Model which was originally used for software development (Figure 1). Tripp and Bichelmeyer (1990) state that this instructional model enables the developers to focus on critical aspects of course design in a shorter period without compromising on the quality of the learning material compared to other traditional instructional design models such as ADDIE or ASSURE. In addition, the model enables the learning designer to use this model as a cognitive tool whilst being the practitioner of knowledge and the co-inquirer (Rathbun, 2017). The model is highly iterative and frequent evaluation forms a critical component of the entire development process. This evaluation enables the developer to detect and address problems in the early stages of the development phase (Rathbun, 2017). Once the development phase has been concluded, then a prototype is produced. This prototype serves as a focal point for critique, idea generation and idea testing (Rathbun, 2017).

Figure 1

Rapid Prototyping Model



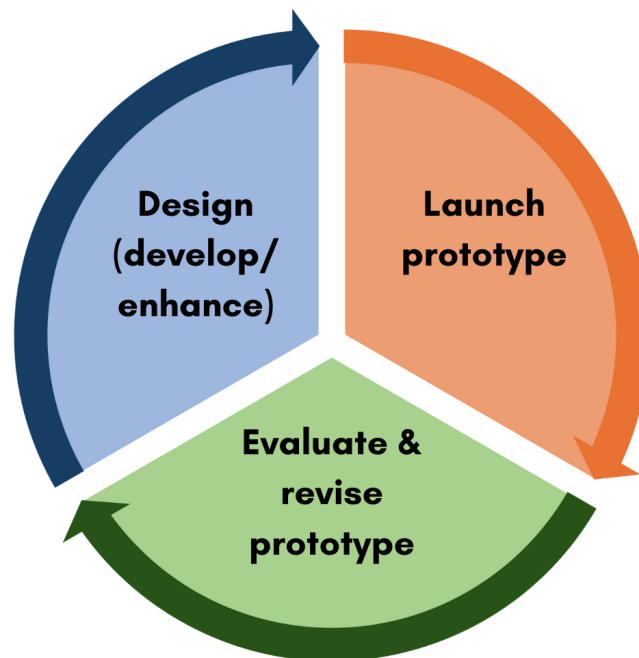
Moreso, with the model, the design process starts with a student and content needs analysis and a statement of the tentative objectives (Tripp & Bichelmeyer, 1990). Information is provided through course evaluations where students get the opportunity to evaluate the quality (content, assessment, tools, level of interaction and support and the competence level of their faculty) of their online courses. In addition to the needs analysis,

the design and research run parallel, and a full understanding of needs, content, and objectives is a result of the design process and not an input into it...research is important during the design phase since it enables the developers to identify the complexities of the subject matter, prerequisite knowledge that might be needed to understand the content, and the presentation modes that will be suited to deliver this content (Tripp & Bichelmeyer, 1990, p. 37).

However, from an instructional point of view, the Rapid Development Prototype model is also fit for CILT's context and was adapted to suit the needs of UNAM. Figure 2 outlines the three phases (Design, launch, evaluate and revise) that make up the adapted RDP model for UNAM.

Figure 2

Adapted RDP Model



In both models (Figures 1 and 2), the element of needs analysis and evaluation is core to the process. In the revised model (Figure 2), the needs analysis is addressed during the design phase. This needs analysis will determine whether development or enhancement will be done using the already approved course outlines for the courses or programmes to be developed. We are fortunate that the learning design process typically does not need to start with the identification of learning outcomes since most of our work was focused on repurposing existing materials for online

use. However, this would differ if it was a new short course or programme. A core adaptation of this model was the iterative production of prototypes of smaller units of content for earlier release and review than the traditional process. This earlier release meant that we could decrease the process from six months to three months, however, we also had to consider various factors that could affect the timely release of online learning materials like the availability of SMEs, the internal and external quality assurance processes that had to take place and the stakeholders that were involved. It should be noted that despite the flexibility of the RDP model, there is still a rigorous quality assurance process that takes place. For example, the online learning materials are quality assured by the content editor, language editor and instructional designer before approval for publishing or online release. These materials can be released per unit or module and we do not necessarily need to wait until the full online study guide has been developed before it is released.

Supporting the implementation of RDP

As the CILT team, we also had to ensure that we assisted faculty in transforming their traditional, face-to-face materials into online materials in a very short time. This is how CILT opted to use the RDP model for the development of its online materials. I must admit that we did not completely depart from using the ADDIE model nor were we confident on how to implement the RDP model successfully. This was indeed a challenge for UNAM and uncharted territory for CILT. However, through our peer tutoring within the department and having to develop an RDP resource site for the Commonwealth of Learning, we quickly grasped the concepts and foundational underpinnings to effectively apply the process in our online learning materials design. Henceforth, there was no turning back to using only ADDIE in our materials development approach and instead, it was a combination of approaches.

With ERT, learning designers were now required to oversee more online-based materials being developed as opposed to print-based materials. This is still the case post-pandemic. We now had to monitor the quality of teaching and learning materials for faculties with each learning designer assigned to a faculty with various schools residing under that faculty. This was in addition to providing learning support and professional development workshops university-wide and contributing to the research output of the university. We also had to brush up on our technology skills and keep abreast of the latest developments in teaching, learning and materials development. Sometimes it proved challenging to juggle all these balls simultaneously as a learning designer.

In addition, learning designers were also the first point of call when course materials had to be repurposed for use because the course outline, content and activities which had already been developed before the pandemic were not fit for purpose during ERT. As learning designers, we had to work closely with the faculty and schools to ensure that their learning and teaching materials complied with the online learning and teaching pedagogies and brought in enhancements like multimedia (Petherbridge et al., 2022). Since this was a crisis-response situation that we faced as an institution, it was not always possible to determine the constructive alignment of existing repurposed content. The absence (or suspicion thereof) of constructive alignment posed a challenge particularly from an instructional point of view since you cannot immediately assess the quality of learning and teaching materials especially not at face value. RDP also assisted learning designers in getting the volume of information needed by the students quickly despite some concerns regarding the quality of the materials (Petherbridge et al., 2022).

Regardless of whether it is online or print-based materials development interventions, learning designers have to coordinate and manage these projects and associated timelines effectively, sometimes going beyond the call of duty if it requires us to do so. During lockdown, most of our “working hours” went beyond the normal eight hours per day and sometimes even extended into the evening and overlapped with our family time. In terms of the future prospects for learning designers, I think there is no limit to our potential, we are in the right space (online) at the right time! This sense of potential is well supported in the literature (Barbour et al., 2020; Bates, 2021; Campbell et al., 2022). As learning designers, we need the support of our institutions, especially in terms of access to conducive, creative environments and access to technology and software that will allow us to freely practise our craft while still conforming to institutional learning and teaching policies and guidelines. We should also recognise that mental burnout and cognitive fatigue pose a serious challenge to learning designers who are required on a daily basis to apply their pedagogical and

technical expertise in various contexts and fields of expertise to satisfy the needs and expectations of our diverse stakeholders.

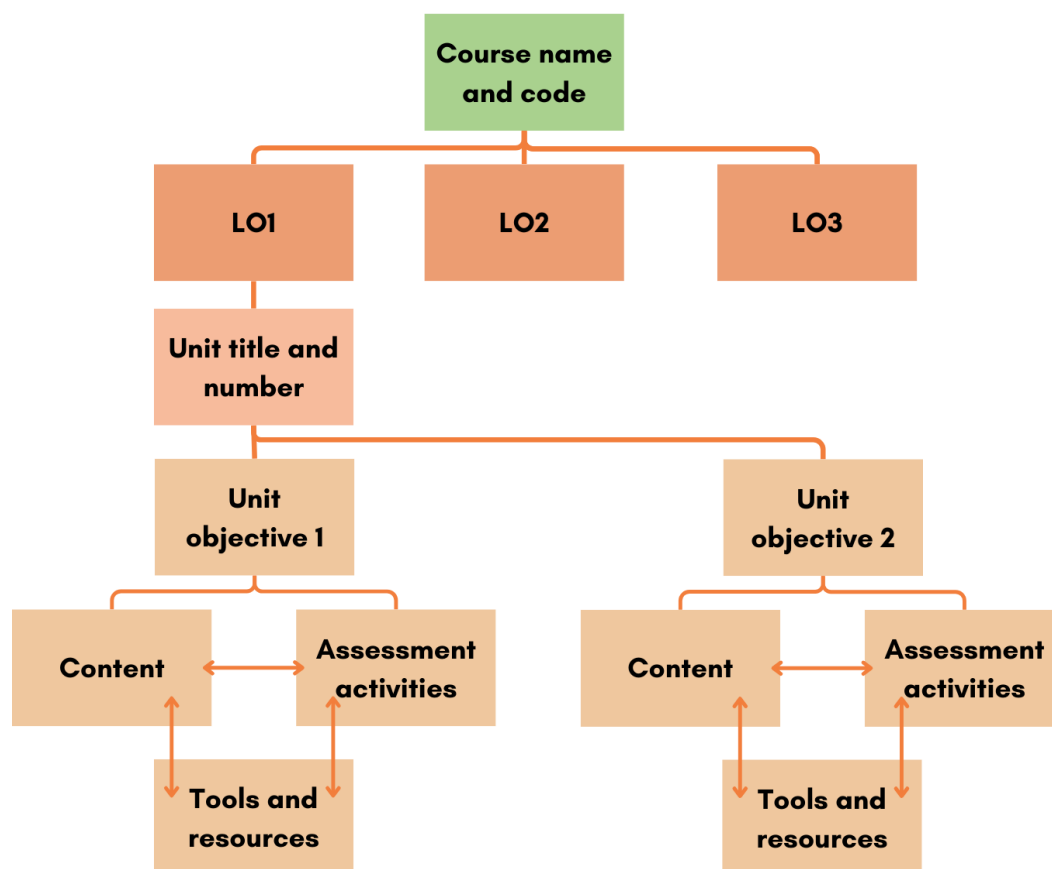
Maintaining constructive alignment in RDP

Since the intense days of ERT, CILT's learning design approach has been simplified and is now more user-friendly. UNAM's SMEs can use the design approach template (Figure 3) to aid in their online learning materials design while ensuring that the learning outcomes, content and assessment activities are constructively aligned. Learning designers can then guide SMEs to determine if all the learning outcomes have been addressed and if the assessment methods, tools and chosen media are appropriate.

With the transition to RDP, the learning outcomes and content were already available for the print-based materials, however, we had to transpose these materials to online learning. This meant that we merely had to enhance the already existing materials, confirm alignment, enhance the content by incorporating multimedia elements and interactive activities and also rework some of the assessment activities by using the various Moodle tools that were available. Thereafter, the materials could be released online and enhancements could still be incorporated without having to retract the learning materials from Moodle. The enhancements can then be the additional or supplementary learning materials that can be provided to the students.

Figure 3

UNAM's simplified online course development template



This template has worked for us, however, some learning designers would opt for using a backward design approach (Hodges et al., 2020) where you map out assessments, learning activities and then your content, and in this way also confirm constructive alignment. Nevertheless, as experts in our field of learning design, we should decide the approach

that best suits the needs of our institutions. There will never be a one-size-fits-all approach to learning design, particularly within this volatile space in which learning design is currently situated.

Positive outcomes of RDP

As an institution, we now save time and can allocate scarce learning and teaching resources where we need it the most using the RDP model. The RDP model is an iterative process that allows learning designers to detect loopholes or defects early in the design phase. By allowing for the prototype to be piloted, tested and then enhanced, RDP promotes a continuous evaluation and quality assurance of the product to be delivered. As learning designers, we also noticed that by using the RDP model for online course design, we are still able to go back to the course and bring in content enhancements depending on the target market. A good example is the RDP training that we provided to other national and international HEIs where we were able to customise the existing RDP resource website content to suit the needs of the stakeholder. Through RDP training, we boosted our open educational resources output and contributed positively to the RDP community of practice.

Shorter development time

In the past, the development of learning materials (online and print) took four months (eight credit courses), six months (12 credit courses), seven months (16 credit courses) and ten months (32 credit courses). It now takes half the development time, from two to five months, using the RDP model and enhancements can be done to the content throughout the process even if the course was published online already. With RDP, there was not always a need to conduct a needs analysis with existing print-based materials that had to be converted to online learning materials nor did we have to use the lockstep, time-consuming ADDIE model. In addition, the same SMEs that developed the print-based materials will also be used to convert the materials for online learning which in turn would also save us time in trying to identify and train SMEs in course development. More so, having the materials online meant that the learning designer could have a bird's eye view of the various stages (development, content-editing and language editing) and could immediately address quality concerns when it is detected.

Not only does the new RDP model save time in the development process, it also ensures that scarce resources are identified and allocated where it would make the most impact and be used sustainably. Again, using the RDP approach to learning materials development means that the learning designers can complete more courses during the year. RDP enables learning designers and SMEs to determine whether the learning outcomes, activities and assessments have been constructively aligned during the design phase of the course. If any gaps are identified during this stage, it is easy for the development team to bring in the necessary enhancements.

Rapid materials update

With learning materials development, the shelf life and relevance of the material are also of utmost importance. In the past, all print-based materials developed by CILT had a shelf life of five years before the materials were reviewed which risked the materials becoming outdated. With the RDP model, it is easy to ensure that materials remain current and relevant since content enhancements can be introduced at any stage after the materials are published online.

The challenges transitioning to RDP model

There are two major challenges to the successful transition to RDP at UNAM: (1) the conceptualisation of the learning designer role and the implications of this for relationships with faculty and, (2) limited resources to support online transitions.

The learning designer role and relationships

Learning designers had to become innovative thinkers, resilient practitioners, and robust researchers on a never-ending quest of searching for economically viable learning and teaching resources. At the same time, we have to ensure a

conducive learning environment for the students who now had to deal with their learning experiences in an isolated, online environment. We had to carefully plan and design our teaching and learning interventions in conjunction with faculty members and instead of using the traditional ADDIE method of course design, we now had to opt for a model that could meet the current demand in the shortest possible time.

In our new role at this time, in addition to supporting faculty with learning design work, we also had to offer end-user technological support. Faculty may regard learning designers as merely technology support personnel instead of recognising that learning designers have a broader role relating to designing teaching and learning. This perception of learning designers as technology support staff resulted in faculty referring student queries about online learning directly to learning designers rather than offering support to their students themselves and taking responsibility and accountability for their courses.

The rapid shift to online learning and teaching and the adoption of RDP resulted in some faculty feeling vulnerable and creating tensions between faculty and learning designers. This could sometimes have been due to miscommunication or professional bias especially since learning designers are mostly employed in a professional or administrative role at HEIs. Transitions to online learning in general faced resistance and some of these became resistance to RDP. Being in an online space meant that your fellow academics can now easily access your course materials and sometimes professional critique in an academic sphere poses challenges. More so, your web presence could also be monitored as well as IT competence or quality of learning materials by looking at your online course content, layout and enhancements. For example, the use of multimedia amongst others.

Xie and Rice (2021) describe similar tensions between faculty and learning designers in their context suggesting the relationship between learning designers and faculty should be clarified, professional discrimination should not be tolerated and that the critical roles and expertise of learning designers should be recognised. In addition to our improved learning design-faculty relationship, the element of appropriate and on-demand support is also of critical importance, particularly during high-pressure periods such as ERT.

According to research (Hodges et al., 2021; Petherbridge et al., 2022; Xie & Rice, 2021), the specific types of support needed by faculty during ERT included one-on-one consultations/ training interventions, technical support to faculty and students, sourcing viable and relevant learning and teaching materials to repurpose traditional mode courses into online courses, offering demand-driven training and improving the digital literacies of faculty and students through the use of appropriate learning and teaching technologies. Future professional learning may focus more on technologies that successfully integrate pedagogies rather than simply showing how the tool works (Xie & Rice, 2021).

Resourcing the transition to online

The transition to online presented various resourcing challenges and barriers. This included resources such as laptops, some of which were old and could not cope with the demand of software that had to be installed to cope with the demands of ERT, the availability and stability of an internet connection and associated high data costs. Additionally, staff lacked motivation to deal with these challenges; some lecturers contracted COVID-19 and were not physically capable of delivering on time, while others might have suffered the loss of a loved one and their productivity was affected. Furthermore, the delivery of online materials was sometimes delayed, for a variety of reasons such as dependencies on SMEs and other factors linked to the devastation brought about by the pandemic.

In addition to reconceptualising our thinking around online learning during a pandemic, we also had to find ways to bring in third and fourth streams of income as the university was faced with ever-decreasing funding from the government. For us, this meant developing income-generating short courses to start becoming self-sufficient and self-sustaining with all the considerations of learning and teaching policies and recognition of prior learning.

Further considerations

We would encourage fellow learning designers and HEIs to consider the RDP model to cater to on-demand materials development and delivery since it is less time-consuming and can offer an immediate solution to on-demand online materials development especially during a crisis. We do not know what future challenges HEIs will face; however, we have learned to be resilient and agile in our thinking and practices going forward. The traditional way of online materials design will not suffice in this demand-driven world that we are currently in and higher education will forever be evolving too.

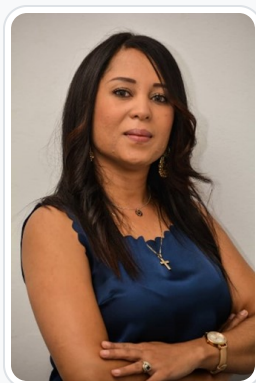
However, there are further considerations if we want to ensure we are successful in our design process. It is imperative that we involve the student as part of the learning materials development process and to improve the constructive alignment. Additionally, online learning materials should be sustainable — easy to adapt, cost-effective and should remain current and relevant to suit the needs of the student. Planning, time management and digital competence should also be aspects that are already catered for during the online course design phase regardless of the instructional design model being used. We should also use training evaluations and data analytics to improve upon our RDP practice and approach to online learning materials design. No intervention can be successful without a change of attitude coupled to it. Therefore, having a positive mindset towards online learning is imperative to the success of online learning and this positive mindset change should be inculcated university-wide at all levels (both administratively and academically).

Now that the role and importance of the learning designers have been more clearly defined and understood, it is critical to establish relevant support systems for learning designers at all levels in educational institutions. Lastly, as Adrienne Clarkson said: “When you get on the boat that’s saving you, don’t pull up the ladder behind you”. Therefore we share our experiences of RDP with the broader learning design and higher education communities.

References

- Allen, M. W., & Sites, R. (2012). *Leaving ADDIE for SAM: An agile model for developing the best learning experiences*. American Society for Training and Development.
- Barbour, M., LaBonte, R., Kelly, K., Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, M. (2020). *Understanding pandemic pedagogy: Differences between emergency remote, remote, and online teaching*. Canadian eLearning Network. <https://doi.org/10.13140/RG.2.2.31848.70401>
- Bates, T. (2021, December 16). *Revising 'teaching in a digital age': The impact of covid-19*. <https://www.tonybates.ca/2021/12/16/revising-teaching-in-a-digital-age-the-impact-of-covid-19/>
- Biggs, J. (1996). Enhancing teaching through constructive alignment. *Higher Education*, 32(3), 347–364. <https://www.jstor.org/stable/3448076>
- Branson, R. K., Rayner, G. T., Cox, J. L., Furman, J. P., King, F. J., & Hannum, W. H. (1975). *Interservice procedures for instructional systems development*. <https://eric.ed.gov/?id=ED164745>
- Campbell, P. S., Arrastia-Chisholm, M., & Torres, K. M. (2022). Stop saying virtual learning does not work: Effective distance learning for K-3 students. In T. Driscoll III (Ed.), *Designing effective distance and blended learning environments in K-12* (pp. 128–147). IGI Global. <https://doi.org/10.4018/978-1-7998-6829-3.ch009>
- Culatta, R. (2023) *Instructional design models*. InstructionalDesign.org. <https://www.instructionaldesign.org/models/>
- Dlamini, R., & Ndzinisa, N. (2020). Universities trailing behind: unquestioned epistemological foundations constraining the transition to online instructional delivery and learning. *South African Journal of Higher Education*, 34(6), 52–64. <https://doi.org/10.20853/34-6-4073>
- Dousay, T. A., & Branch, R. M. (2022). *Survey of instructional design models* (6th ed.). Brill.
- Edmonds, G. S., Branch, R. C., & Mukherjee, P. (1994). A conceptual framework for comparing instructional design models. *Educational Technology Research and Development*, 42(4), 55–72. <https://doi.org/10.1007/BF02298055>
- Heinich, R., Molenda, M., & Russell, J. D. (1993). *Instructional media and the new technologies of instruction*. Macmillan.
- Hodges, C. B., Moore, S., Lockee, B. B., Trust, T., & Bond, M. A. (2020, March 27). The difference between emergency remote teaching and online learning. *EDUCAUSE Review*. <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>
- Hodges, C. B., Moore, S. L., Lockee, B. B., Bond, M. A., & Jewett, A. (2021). An instructional design process for emergency remote teaching. In D. Burgos, A. Tlili, & A. Tobacco (Eds.), *Radical solutions for education in a crisis context: Covid-19 as an opportunity for global learning* (pp. 37–51). Springer Singapore. http://dx.doi.org/10.1007/978-981-15-7869-4_3
- Instructional Design Central. (n.d.) *Instructional design models*. <https://www.instructionaldesigncentral.com/instructionaldesignmodels>
- Kumar, R., & Strazdins, N. (2021). *The digital infrastructure divide in the commonwealth*. Commonwealth Secretariat.
- Morgan, T. (2019). Instructional designers and open education practices: Negotiating the gap between intentional and operational agency. *Open Praxis*, 11(4), 369–380. <https://files.eric.ed.gov/fulltext/EJ1251321.pdf>

- Ndzinisa, N., & Dlamini, R. (2022). Responsiveness vs. accessibility: pandemic-driven shift to remote teaching and online learning. *Higher Education Research & Development*, 41(2), 1–16. <http://dx.doi.org/10.1080/07294360.2021.2019199>
- Petherbridge, D., Bartlett, M., White, J., & Chapman, D. (2022). The disruption to the practice of instructional design during COVID-19. *Journal of Applied Instructional Design*, 11(2). <https://dx.doi.org/10.51869/104>
- Rathbun, G. A. (1997). Reconceiving ISD: Three perspectives on rapid prototyping as a paradigm shift. In *Proceedings of Selected Research and Development Presentations at the 1997 National Convention of the Association for Educational Communications and Technology*.
- Tripp, S. D., & Bichelmeyer, B. (1990). Rapid prototyping: An alternative instructional design strategy. *Educational Technology Research and Development*, 38(1), 31–44. <https://eric.ed.gov/?id=ED409862>
- Trotter, H., Huang, C.W., & Czerniewicz, L. (2022). Seeking equity, agility, and sustainability in the provision of emergency remote teaching during the COVID-19 pandemic: A center for teaching and learning takes an expanded role. *Higher Learning Research Communications*, 12, 1–24. <https://open.uct.ac.za/10.18870/hlrc.v12i0.1280>
- van Heerden, L. (2021). Observations in learning design training during COVID-19 restrictions: An autoethnographic approach. In *Proceedings of the 13th International Conference on Education Technology and Computers*, 297–301. <https://doi.org/10.1145/3498765.3498811> .
- Xie, J., & Rice, M. F. (2021). Instructional designers' roles in emergency remote teaching during COVID-19. *Distance Education*, 42(1), 70–87. <http://dx.doi.org/10.1080/01587919.2020.1869526>



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