THE INTERNATIONAL JOURNAL OF HUMANITIES & SOCIAL STUDIES

Digital Learning Content: Solution to Continuity of Learning in Technical and Vocational Institutions in Kenya: A Practical Approach

Dr. Hellen Kiende Guantai
Lecturer, Department of Educational Management, Policy and Curriculum Studies, Kenyatta University, Kenya
Dr. Samson Kariuki Ikinya
Lecturer, Department of Educational Management, Policy and Curriculum Studies, Kenyatta University, Kenya

Abstract:
Teaching in all learning institutions globally has been radically affected by the new emerging world dispensation which has triggered learning institutions to think of viable and sustainable alternatives to continue learning. Specifically, the onset of the Corona Virus Disease of 2019(COVID- 19) pandemic has resulted to drastic repercussions in the education sector where most institutions were used to the traditional face to face modes of delivery. Consequently, COVID-19 resulted to closure of Schools, Technical and vocational education training (TVET) institutions and Universities on 15th March 2020 affecting over 20 million children and youths as they were forced to remain at home. The implication of closure of the institutions increased vulnerability of youth due to being out of school and prolonged period of completion. The purpose of this paper is to develop a model that supports continuity of learning in technical and vocational institutions in Kenya. The study adopted a participatory approach as the framework for the methodolody. This was guided by: review of Literature on the status of developing digital learning model, develop the interactive digital learning content and coming up with a digital learning content model. Digital content for ten Diploma Level courses were used in this study. Interviews of digital learning key informants and document analysis were used as the instruments for data collection. The proposed model was piloted at Mathioya technical and vocational college. The key finding of this study is that the proposed digital learning content model is practical in the technical institutions. The model can foster continuity of learning. The study also established that the trainers have inadequate skills in instructional design and hence not able to produce interactive content for learning. The study recommends continuous re-tooling and support for the trainers in the development of digital learning content in addition to integrating the workplace-based learning in the implementation of the digital learning.

Keywords: *Digital learning, TVET, e-learning model, instructional design and digital content*

1. Introduction

Digital content has been conceptualized as any content that exists in form of digital data that could be utilized for teaching and learning. Mullan, 2011 posits that digital content comes in different forms, from text, audio and video files to graphics animation and images. Further digital content refers to information available for download or distribution on electronic media. However, many stakeholders in the content industry argue that digital content is anything that can be published.

Teaching in technical and vocational institutions has been going on in the traditional way without any interruptions. The Kenyan government has invested in the TVET sector in the spirit of eradicating poverty, promoting livelihoods by enhancing employment in Kenya. The government has realized that investing in technical education is key to the promotion of economic development of the country with optimal utilization of skills acquired in these institutions. Indeed, the institutions are seen as the anticipated solution to the country achieving the Vision 2030, the Big four agenda, namely, affordable health, manufacturing, affordable housing and food security. A skilled nation will contribute to the Africa Agenda of 2063 and United Nations Sustainable Development Goals that advocates for eradicating poverty through skills training.

Skills development through training in technical, vocational institutions and acquisition of entrepreneurship skills enables a country to attain economic development and increase per-capita income per household. The benefits of skill development have been evident in Singapore among other Asian countries. Today Singapore has the highest per-capital GDP in Asia despite being on the same level with Kenya at Independence. For rapid social-economic growth training institutions in Kenya have to adapt and adopt to the emerging skill acquisition in the current dispensation of COVID 19.

Consequently, there is need for a paradigm in the teaching and learning processes within the technical and vocational training institutions. The critical question is how do these institutions continue teaching amidst the pandemic?

The solution is embracing digital learning that is interactive and engaging to ensure that institutions remain a float in these uncertainties. According to the international Society for Technology in Education, 2020 with digital transformation teachers can help students achieve careers that can make their future successful in addition to fostering flexibility in learning. The COVID-19 pandemic is awakening a reality that online education should be an integral part of teaching and learning in all institutions (Lie et al., 2020). The training institutions must prioritize integrating technology into existing curricula, as opposed to using it as a crisis-management tool. This will foster preparedness in the training institutions and hence continue learning at all times

Critical to note is that effective use of digital learning tools in classrooms can increase student engagement, help teachers improve their lesson plans, and facilitate personalized learning. It also helps students build essential 21st-century skills. Virtual classrooms, video, augmented reality (AR), robots, and other technology tools can not only make class livelier, they can also create more inclusive learning environments that foster collaboration and inquisitiveness and enable teachers to collect data on student performance (Luckin, Holmes, Griffiths & Forcier, 2016).

1.1. Statement of the Problem

Continuous learning in the midst of any pandemic is critical in the realization of skilled youth who will take part in social economic development of the country. To prepare skilled youth it is paramount they remain in the learning institutions within the stipulated time of training to be guided on the skill acquisition process. However, the current situation has left a significant number of youths out of school and hence making them vulnerable. This has been attributed by inadequate preparation on innovative teaching and learning strategies that can enhance continuity of learning amidst any eventuality. Therefore, this study sought to develop a model that supports continuity of learning in the technical and vocational institutions in Kenya with a view to mitigating any unforeseen eventualities that may disrupt the teaching and learning process.

1.2. Status of Development of Digital Learning Content

Development of digital content has brought a critical milestone in the way in which continuity of learning can be achieved amidst any circumstances. However, the dilemma is that most technical institutions in the developing countries are not adequately prepared to undertake this process due to the various constraints involved in the process but the good news is that institutions are beginning to see the need to start undertaking this investment. In light of the situation and with advancement of e-learning content, numerous institutions have accepted this move and have some kind of e-picking up programming set up Ashton, (2008). A few schools as of now have their own e-Learning set up working whereas others are battling to think of a framework because of compelled assets (Blake, Bermingham, Johnson & Tabner, 2020).

A portion of the angles considered being developed of advanced substance are; the learning board framework (LMS), support for students and showing staff as far as preparing them on the best way to create substance and offer data. Content improvement is key in advanced substance whereby instructors plan and bundle the substance in the LMS (McKee, 2013). In any case, there is a hole in the method of preparing in that there do not have an orderly assessment and quality substance. The use of Information and information communication technology has the potential to revolutionize learning in technical and vocational institutions through innovative strategies adopted by both learners and teachers to conduct learning (Mikre, 2011). Effectiveness of online teaching is anchored on three pillars and these are good content that the student is able to interact with, collaboration so that students are able to engage and well though assessment and a suitable feedback mechanism.

Sustainable Development Goal 4 (SDG4) embodies an ambitious and transformative agenda. Within this, Technical and Vocational Education and Training (TVET) has been given greater prominence as a means to equip youths and adults with relevant skills for employment, decent jobs and entrepreneurship (Ojokheta, 2020). The United Nations Educational, Scientific and Cultural Organization (UNESCO), notes that rising youth unemployment is a challenge for both developed and developing countries, and that an estimated 73 million youth worldwide are currently unemployed (Bersaglio, Enns, & Kepe, 2015). The implication is that a huge percentage of the population is not able to participate in gainful employment hence affecting both individual and the country per capital income.

1.2.1. Models of Developing Digital Content

The models for creating computerized content are; Request Driven Model. The model examines the innovation learning the board framework, substance and administrations. The innovation is a help or a device to accomplish the ideal learning results in a practical manner. Essential objective of model is to urge scholastics to effectively take part in the turn of events and use innovation in instructing measure (Elmarie & Engelbrech, 2003). This model features the significance of understanding the changing necessities of students and teachers just as instructive changes and along these lines' changes should be made in substance and administrations.

1.2.2. Strategic e-learning Model

E-learning is centered on understudies as dynamic, self-decided people who measure data and develop information. This model investigates the need of online students experience and their issues which they may have never experienced in conventional learning conditions; for instance, how to deal with the sensations of disconnection and how to take care of online innovative issues without anyone else (Tsai, 2009). The model has the student at its center, and around this center are three intelligent segments that clarify fruitful learning: ability, will, and self-guideline. Late examination investigates online request-based learning and guarantee that more significant level psychological techniques work with

understudy information development (Salovaara, 2005) and advancement of understudy metacognitive systems (Kramarski and Gutman, 2006; Quintana, Zhang and Krajcik, 2005). The Essential e-Learning model clarifies and assesses understudy e-gaining from metacognitive points of view. The model structure is built and outlined by four elements of qualities of e-learning conditions and three center spaces (saw expertise, fondness and self-guideline) of understudy e-learning techniques. y. This instrument gives a demonstrative instrument to e-learning specialists, framework originators, educational plan engineers and educators to assess understudies' e-learning systems in their trial, plan and improvement.

1.2.3. Funnel Model for Implementing E-Learning

Funnel Model for carrying out e-learning (Mohamed & Dr. Oso Willis, 2014) Pipe model as an answer for the issues of execution of E-learning in tertiary instruction establishments. While existing models like Hat, hypothesis-based E-learning and academic model have been utilized after some time, they for the most part been discovered to be lacking a result of their inclinations to treat materials improvement, instructional plan, innovation, conveyance and administration as independent and segregated substances (Luck et al., 2001). The Pipe model improves every one of these into one and applies simultaneously and non-concurrently to E-learning execution where the distinction just is modalities. A particularly model for E-learning execution has been inadequate. The Pipe model dodges advertisement specially appointed methodology which has been made different frameworks unused or wasteful, and traded off instructive quality. Pipe model should help tertiary training foundations embrace and create powerful and proficient E-learning framework which meets clients.

1.2.4. E-learning Acceptance Model (ELAM)

E-learning acknowledgment implies innovation acknowledgment to adjust, uphold and work with learning measure by data and correspondence innovation (Jenkins and Hanson, 2003). E-learning implies utilizing distinctive ICT devices like PCs, PCs, tablets, I-Cushions, cell phone, web, nearby broadcast communications and different foundations and substance made with this device like sound, video, liveliness, illustrations and a lot more for viable learning and to amplify execution levels of students.

1.2.5. E-learning Technology Acceptance Model

The other mainstream accessible model in carrying out E-learning innovation is the Acknowledgment Model created by Davies in 1989, which depends on client prerequisites. The model depends on the reason that the two understudies' impression of E-learning use and its apparent handiness influence clients' aim. As per this theory, one principal determinant of effective execution of E-learning is client acknowledgment (Masrom, 2007).). The Cap model comprises of three factors; apparent helpfulness, saw usability, and intension to utilize. This model spotlights on the utilization of E-learning innovation for content administration however does not consider either the instructive parts of E-learning or arranged execution of E-learning framework.

1.2.6. Instructional Design Model

Robert Gagne is viewed as one of the preeminent supporters of the methodical way to deal with instructional plan and his hypothesis has given an incredible number of significant thoughts for coaches and educators. Gagne's model of instructional plan depends on the data preparing model of the psychological occasions that happen when grown-ups are given different boosts and spotlights on the learning results and how to orchestrate explicit instructional occasions to accomplish those outcomes (Van Merriënboer, 1997). Essential to Gagne's thoughts of guidance are what he calls conditions of learning‖: interior conditions manage what the student knows preceding the guidance, outside conditions manage the improvements that are introduced to the student, for example guidelines given by the instructor.

In computerized content, the accompanying ought to be upgraded to guarantee that the e-learning framework is viable. That is educators being in a situation to Start students' premium and interest to rouse getting the hang of, illuminating students regarding the preparation destinations to be accomplished, including questions or a movement to connect with existing information to which students can relate new substance. The mentors should likewise introduce the new substance students should learn, ideally with an assortment of media, give learning direction, brief students to work on utilizing recently mastered abilities and information, give input, evaluate execution just as offering help to guarantee students apply recently acquired information and abilities at work (Donnelly, Mueller & Gallahue, 2016).

1.3. ADDIE model (Analysis, Design, Development, Implementation, and Evaluation

The ADDIE model is the conventional interaction generally utilized by instructional fashioners and preparing developers. One regularly acknowledged improvement to this model is the utilization of fast prototyping (Molenda, 2003). This is accepting nonstop or developmental input while instructional materials are being made. This model endeavors to set aside time and cash by getting issues while they are still simple to fix.

1.3.1. Plan Stage

The plan stage manages learning targets, evaluation instruments, works out, content, topic examination, and exercise arranging and media determination. The plan stage ought to be efficient and explicit. Methodical methods a coherent, efficient strategy for distinguishing, creating and assessing a bunch of arranged methodologies focused for achieving the undertaking's objectives. Explicit methods every component of the instructional plan should be executed with thoughtfulness regarding subtleties.

1.3.2. Development Phase

The improvement stage is the place where the engineers make and gather the substance resources that were made in the plan stage. Software engineers work to create or potentially coordinate innovations. Analyzers perform investigating techniques. The undertaking is checked on and updated by any input given.

1.3.3. Implementation Phase

During the implementation phase, a methodology for preparing the facilitators and the students is created. The facilitators' preparation should cover the course educational program, learning results, technique for conveyance, and testing systems. Readiness of the students remember preparing them for new instruments (programming or equipment), understudy enrollment. This is likewise the stage where the venture supervisor guarantees that the books, hands on gear, apparatuses, CDROMs and programming are set up, and that the learning application or Web website is useful.

1.3.4. Evaluation Phase

The assessment stage comprises of two sections: developmental and summative. Developmental assessment is available in each phase of the ADDIE cycle. Summative assessment comprises of tests plan.

1.4. Gaps in the Models that Already Exist

The following are some of the gaps found in the models that already exist in the development of digital content which then inform the coming up with a new model to bridge the existing gaps:

1.4.1. Knowledge Gap

The principal sort of hole is an information hole: understudies don't have the correct data, or enough data, to accomplish the learning result. More often than not, fixing this hole includes giving understudies the data they need at key focuses like guiding them toward a library asset module prior to requesting that they do an exploration movement. On the off chance that all the understudy needs are data, this sort of hole is not difficult to fix with content.

1.4.2. Skill Gaps

More often than not however, understudies do not have the foggiest idea how to manage the data they've been given. These sorts of holes are ability holes understudies should be guided and instructed through how to manage the data or substance you give them, and understudies can't get capable at these abilities without training. To decide whether your results may introduce ability holes, inquire as to whether the result is something that requires practice or not. On the off chance that it does, the odds are acceptable that ability holes will exist, and your exercises ought to be custom-made to take into account practice and training. This methodology is here and there alluded to as psychological apprenticeship-which we will address in a later show.

1.4.3. Motivational Gap

At the point when you're considering your understudies and learning holes, inspiration is key. If an understudy has the correct data and has been trained through utilizing it however doesn't, it's an inspiration hole. Understudies may not be persuaded in light of the fact that they don't accepting the learning results, or the learning results aren't unmistakably expressed. Frequently, understudies aren't inspired in light of the fact that they don't get the 10,000-foot view regularly in light of the fact that they aren't given the higher perspective. Giving your understudies some setting for their learning will go far to help fill this hole this means instructive straightforwardness (for what reason would we say we are doing this?) and curricular and co-curricular lucidity (how can it relate to my life or my schooling?)

1.4.4. Change Gap

Another kind of learning hole is the change hole. A large portion of us experience this kind of hole when we plan an action that expects understudies to think or learn such that they aren't utilized to-this includes fixing old learning propensities and practices. For instance, in the event that you are almost certain that understudies have figured out how to utilize library research information bases in under viable manners, you might need to incorporate a module that mentors them through changing those propensities, as opposed to expecting that they can or will change those propensities.

1.4.5. Environmental Gap

Sometimes, the practical elements of actually doing the activities aren't supported or rewarded by the organization or environment. This is an environmental gap. For example, there might not be enough statistical computing software licenses available for students in a research methods course. It's important to anticipate these environmental gaps and alter your activities accordingly.

1.4.6. Communication Gap

I would say planning on the web courses, the most well-known sort of learning hole is really a correspondence hole: understudies are given muddled or inadequate bearings, confounding targets, or aren't given sufficient setting for the exercises or substance they are being given. These holes in correspondence are truly barely noticeable in online courses specifically, on the grounds that we're accustomed to accomplishing such a great deal of the correspondence of assumptions and exercises in the study hall. It is imperative to spending sufficient opportunity to set up or account

intensive guidelines and clarifications for the entirety of your exercises and substance. Later in this arrangement, show #12 tends to composing viable guidelines and a learning story that gives your understudies the setting they need to succeed.

1.5. Development of Interactive Digital Learning Content

We characterize intuitiveness in the e-Learning setting as a necessary piece of the instructive substance, offered by a bunch of techniques and apparatuses that power the student to escape from the condition of being an inactive beneficiary of data and possesses the student with a progression of activities and responses, which assists with extending the comprehension of the current subject through experimentation, gaining from errors, and managing unforeseen occasions. The fundamental point is to have an instructive substance that can develop the student's comprehension of the instructive material and meet its instructive destinations.

1.6. Importance of Interactivity in the Modules

Some of the importance of Interactivity intelligence in the modules are:

1.7. Enhanced Learning Environment

Intuitiveness techniques use intelligent preparing programming to permit representatives to investigate their learning climate in their own specific manner and at their own speed. In this climate representatives will likewise be shown straightforwardly the best way to get things done, a learning strategy that brings far superior outcomes than instructing workers.

1.8. Improved Decision-Making

Using situation questions and reproductions, intuitiveness permits worker students to apply information and settle on choices in a danger free non-critical climate.

1.9. Reinforcement through Feedback

An intuitive preparing/learning stage expects representatives to react to what they are realizing. This powers them to incorporate the learning content with their own interesting perspective as they stop to ponder the appropriate response they should give or the way they ought to pick.

1.10. Higher Levels of Engagement

Intuitiveness programming coordinated with genuine game-plan thinking doesn't simply introduce learning content. It submerges students in the substance and gives them power over the learning cycle. Subsequently, learning encounters become more striking, stories all the more impressive, and questions more provocative.

1.11. Greater Retention Rates

Studies show that a more significant level of commitment during preparing exercises brings about more noteworthy maintenance and review of information with respect to the student. Furthermore, intelligence procedures like the utilization of sight and sound components, genuine situations, and surprisingly essential accomplishment levels and identifications can assist with changing the most everyday preparing modules into drawing in, interesting and noteworthy learning encounters.

1.12. More Motivated Learners

Perhaps the greatest test corporate mentors face today is persuading workers to take an interest in the picking up/preparing measure. This is particularly overwhelming for associations whose preparation instruments and techniques have neglected to use the advancements that their representatives are utilizing each day in their own lives.

1.13. Challenges to Developing Interactive Modules

There are difficulties in creating intelligent modules such as:

1.13.1. Distractions Everywhere

Interruptions are a truth of far-off work, and they become much a greater amount of an issue with regards to far off preparing. A package conveyance or a pet running into the home office is only an interruption if a student is noting messages, yet on the off chance that the person in question is in a virtual homeroom meeting, it's troublesome for everybody included.

1.13.2. Scheduling Problems

Planning in-class preparing can be a cerebral pain, however booking far off learning can be a much greater test. At the point when you utilize a mixed learning arrangement that expects participants to focus on numerous simultaneous and non-concurrent exercises (e.g., eLearning, virtual teacher drove preparing (VILT) and video registration meetings), it adds another layer of intricacy.

1.13.3. Poor Online Training Content

What functions admirably in a teacher drove preparing (ILT) climate doesn't generally make an interpretation of impeccably to great distant preparing. Introductions utilized in ILT may work in a virtual study hall setting with a touch of tweaking, yet for intuitive eLearning courses, you should repurpose existing substance.

1.13.4. Technical Issues

Indeed, even in the homeroom climate, it's workable for specialized issues to interfere with instructional meetings. Distant preparing is much more helpless. From unsteady organization associations with programming bugs and preparing climate access issues, the rundown of things that can turn out badly is broad.

1.13.5. Learners Being Left Behind

In the classroom, the teacher can screen the learners and change their speed to oblige any individual who needs additional time. In a virtual study hall, it is harder to do as such. Students may remain quiet or 'put on a good show' and afterward leave the preparation feeling miserable, baffled and having gotten the hang of nothing.

2. Digital Content Development Model

How then do technical institutions fit into the context? Digital content development model is the solution to all these critical concerns. In order for any technical and vocational institution to be able to develop digital content for teaching and learning, the following steps have been proven to deliver a complete sample which can be used by trainees to master specific skills (Clark, 2011). In the context of Competence Based Training, it is not a must for a trainee to take a whole course but instead the trainee can pick on a specific unit of competency which offer the needed skills that can be utilized in the world of work. This is meant to enhance employability among the youth who comprise more that 35% of the Kenyan populace yet they have no skills (Hope, 2012).

The following are the steps:

2.1. Conceptualizing the Curriculum and Occupational Standard to Come with a Constructive Alignment

The first step in the development of the digital content is to have a clear conceptualization of the documents that inform the process. The experts need to familiarize with the curriculum which gives the learning outcomes which guide the process of development (Kellett, 2005). The curriculum enables the digital media developers to work within the stipulated confines of the curriculum. The digital content developer must also familiarize with the Occupational standard. According to UNESCO, National Occupational standards defines the competencies which apply to job roles or occupations inform of statements of performance, knowledge and evidence required to confirm competence. Occupational standards describe good practice in particular areas of work and set out a statement of competence which bring together the skills, knowledge and understanding necessary to do the work (Stratton, 2011). They also provide managers with a tool for a wide variety of workforce management and quality control in addition to offering a framework for training and development. It is important to note that Occupational standards are industry driven to ensure that only those skills that employers need are included in the curriculum. This is the aspect that makes the technical training institutions unique since they work in close collaboration with the industry to meet the needs of the labor market demands.

The digital content developer must also familiarize with the learning guide in the specific area. Learning guides are developed to support the curriculum implementation process. They are expected to provide a common and a standardized way of interpreting the curriculum in an effort to foster uniformity in the process of curriculum implementation. Learning guides provide the digital content developer with the information which then is translated into Power Points.

2.2. Training of the Digital Development Team

The second step is the training of the digital development team to guide the process of developing the text inform of PowerPoint presentations. As an institution you have to invest in empowering and supporting the staff to acquire the skills and techniques needed to develop digital learning media. Effective training designed for the institution can provide the staff with the knowledge and skills to successfully perform their duties and further build their confidence in delivering the online lessons (Wilson & Stacey, 2004). Digital learning can be a critical pathway for providing continuous learning and development opportunities for the staff. It offers a viable avenue for re-tooling of staff due to the changing nature of technology in learning.

Teachers are the biggest asset in any teaching institution as they're responsible for performing and handling day-to-day operations at various levels, they directly interact with students, and they each fulfill specific roles and responsibilities that help the institution meet to attain its objective. Employee training and workplace learning is an essential investment in order to not only empower your staff to exceed in their positions but to drive your institution forward with a confident and fully-equipped team. Consequently, once the digital development is trained, they are able to develop the content according to the stipulated needs of the institution and also in such a way that they ensure the learning material developed is interactive and engaging for the learners (Woods, 2020, July)

2.3. Develop Storyboard

This is the third step in the development of digital media where the experts are expected to conceptualize specific learning outcomes to provide a coherent and logical flow in the development of the Power Points. Storyboard is a visual

representation of how your teaching experience will unfold in a systematic manner. It should have images and notes explaining what should happen at any particular moment. Further, a storyboard is a planning document. It is created before the final product is developed and used to illustrate how the completely developed learning outcome will look like (Flagg, 2013). A well thought out story board is important because it ensures that the digital content developers cover comprehensively the learning outcome being developed. It also serves as useful framework that guides the expert throughout the process of developing the Power Points.

2.4. Developing the Text

The fourth step in the development of digital content is the development of the PowerPoint presentations. The expert is guided by content in the curriculum, occupational standards and learning guide to develop power-point presentations per learning outcome. The power points are expected to be interactive and engaging to foster effective learning. It is also for experts to realize that good power points should not be crowded and must guide the student to know what is important. A complete PowerPoint has the following sections which an expert has to think carefully: Introduction, definition of key terms, identification of the topics as guided by the curriculum and occupational standards, real life demonstrations. The PowerPoint also comprises the reflections, illustrations and activities which the learners have to engage in as they learn. The PowerPoint also has both practical and multiple assessment question which the students are expected to attempt to evaluate their learning (Moon, 2001). The power point ends with a conclusion which summarizes the key activities and areas that were covered in the learning outcome.

It is important to note that all illustrations and images used in the power point must be given due acknowledgement to avoid plagiarism. The real-life demonstrations embedded in the PowerPoint must be brief and to the point and must supplement the text in order to foster learning. One critical point to note is that as the expert develops the power point presentation, they must have the end user in mind.

2.5. Review of the Text Content

Once the power points are developed it is important for the content developer to review the Power Points to ensure that they are comprehensive and all the aspects have been covered. This also meant to check any grammatical errors that may hinder learning. Reviewing is a check mechanism to enhance the correctness and accuracy of the content and confirming that all the illustrations that have been used are duly acknowledged.

2.6. Pre-Production of the Real-Life Demonstration

This is the planning phase before the production of the real-life demonstrations to be used for teaching and learning. The real-life demonstrations are expected to bring reality into the classroom and consequently create long lasting impressions in the process of student learning (Moon, 2001). It is therefore imperative for the expert doing the real-life demonstration to fully conceptualize in order to ensure that all aspects in the performance criteria are covered. The essence of real-life demonstration is what breaks the monotony of learning and teaching by providing students with unique experiences which facilitate quick grasping of the content being taught.

2.7. Production of Real-Life Demonstration

Production of real-life demonstration is meant to enrich the process of teaching and learning by bringing reality into the classroom. Demonstrations are important in the lesson because they arouse student interest in learning in addition to motivating them to remain focused on the lessons. The production of real-life demonstration involves the expert in the specific area conceptualizing the learning outcomes of the lesson in a visual manner. Demonstrations involves the trainer performing the activity in a systematic way This calls for creativity and innovative strategies which will be used to deliver the real-life demonstration to fit in the lesson. Demonstrations in learning are important because they enable the students to connect the hard theoretical concepts to actual practice, Effective demonstrations for teaching should ensure that the object being displayed during demonstration not so small. During the demonstration, the clear language should be used so that trainees may understand concept easily. The trainees should be able to question teachers in order to remove their difficulties and hence a reflective activity and a feedback session must be provided to enhance the process of learning.

2.8. Identification of Authorized Supplementary Real-Life Demonstration from the Internet

This involves getting short video clips from the internet to spice up the PowerPoint presentation. However, the clips must be free for use to avoid copy right issues. The importance of the short clips is to foster clear student understanding of some of the components that are being taught in the learning outcome

2.9. Editing of the Real-life Demonstration

This involves going through the real-life demonstrations to ensure that they address the learning outcome comprehensively. It is important to note that the real-life demonstrations should be a maximum of ten minutes to ensure the students to download and watch offline. This is in the context that lack of access to internet is the greatest obstacle to digital learning by institutions. It is also at this point that the videos are added sub-titles to foster inclusivity in learning. In the process of editing the videos it was clear that there is indeed lack of expertise in this area which derails the process of developing the digital content.

2.10. Pre-Teaching and Voicing

This is where the experts record the Power Points in the studio. The expert goes through the power points and expounds on them as they present the lesson. The expert is expected to familiarize with all the slides and activities that will be undertaken in the learning outcome. It is important to note that what enriches digital content is the teacher presence which ensures that the whole lesson remains alive.

2.11. Embedding the Real-Life Demonstration into the Text

Once the power points are recorded and voiced, they are added over to the multimedia team to embed the real-life demonstration and come up with a complete teaching video. This has to be done carefully to ensure that the demonstrations are put at the right place in the learning outcome to support the delivery of the same. The team has to ensure that the voice is clear after optimization. The synchronization of content ensures systematic flow which ensures that students remain hooked up in the lesson.

2.12. Rendering and Storage

Video rendering refers to the process through which a computer system methodically processes information from a coded data source to transform that information to put together and display an image. In other words, rendering converts the source material into the final picture or footage which will then be packaged to be submitted ready for use. The importance of rendering is to ensure the video playback in real time with little stutter and with all effects and everything else in place. When rendering anything, you may be adding effects, layers, adjustments in color, and multiple audio tracks.

The illustration below shows the diagrammatical representation of the model which can be adopted by training institutions to develop digital learning content

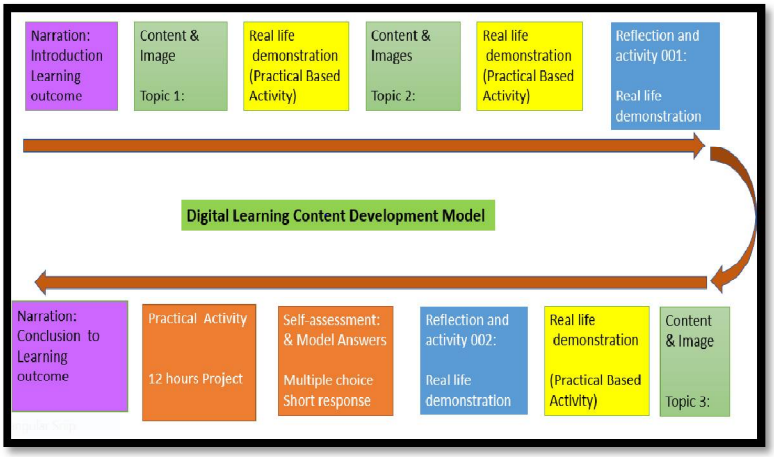

Figure 1
Source: Ikinya & Kiende 2021

3. Methodology

The study adopted a participatory approach where experts were involved in the development of digital learning content at all stages. These were subject experts who were qualified in the specific areas that were developed. Sampling of the areas to be developed was purposively chosen by the Ministry of Education through TVET –CDACC. Key informant interviews and document analysis were used as instruments for data collection.

4. Recommendations

The study sought to establish digital content development in technical training institutions as a solution to continuity of learning in the same institutions. With regard to what was found during the development of the proposed model the study recommends the following:

- The technical training institutions invest in re-tooling the trainers so that they acquire the skills and competencies needed to develop digital media.
- The state department of Technical and Vocational institutions roll out a country wide support programme to support the technical trainers in the development of digital content
- TVET-CDACC undertakes continuous sensitization in all technical and vocational institutions on the need for digitalization of content to ensure continuity of learning in the institutions without any interruptions

5. References

i. Ashton, K. (2008). Bachelor of Arts (Honours).
ii. Bersaglio, B., Enns, C., & Kepe, T. (2015). Youth under construction: the United Nations' representations of youth in the global conversation on the post-2015 development agenda. *Canadian Journal of Development Studies/Revue canadienne d'études du développement*, *36*(1), 57-71.

iii. Blake, H., Bermingham, F., Johnson, G., & Tabner, A. (2020). Mitigating the psychological impact of COVID-19 on healthcare workers: a digital learning package. *International journal of environmental research and public health*, *17*(9), 2997.
iv. Clark, R. C. (2011). *Developing technical training: A structured approach for developing classroom and computer-based instructional materials*. John Wiley & Sons.
v. Donnelly, F. C., Mueller, S. S., & Gallahue, D. L. (2016). *Developmental physical education for all children: theory into practice*. Human Kinetics.
vi. Engelbrecht, E. (2003). A look at e-learning models: investigating their value for developing an e-learning strategy. *Progressio*, *25*(2), 38-47.
vii. Flagg, B. N. (2013). *Formative evaluation for educational technologies*. Routledge.
viii. Hope Sr, K. R. (2012). Engaging the youth in Kenya: empowerment, education, and employment. *International Journal of Adolescence and Youth*, *17*(4), 221-236.
ix. Jenkins, M., & Hanson, J. (2003). E-learning series: A guide for senior managers. *Learning and Teaching Support Network (LSTN) Generic Centre, United Kingdom*.
x. Kellett, M. (2005). *How to develop children as researchers: A step by step guide to teaching the research process*. Sage.
xi. Kramarski, B., & Gutman, M. (2006). How can self-regulated learning be supported in mathematical E-learning environments? *Journal of Computer Assisted Learning*, *22*(1), 24-33.
xii. Lie, A., Tamah, S. M., Gozali, I., Triwidayati, K. R., Utami, T. S. D., & Jemadi, F. (2020). Secondary school language teachers' online learning engagement during the COVID-19 pandemic in Indonesia. *Journal of Information Technology Education: Research*, *19*, 803-832.
xiii. Luck, M. A., Jenerette, G. D., Wu, J., & Grimm, N. B. (2001). The urban funnel model and the spatially heterogeneous ecological footprint. *Ecosystems*, *4*(8), 782-796.
xiv. Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). Intelligence unleashed: An argument for AI in education.
xv. Madar, M. J., & Willis, O. (2014). Strategic model of implementing e-learning. *International journal of scientific & technology research*, *3*(5), 235-238.
xvi. Masrom, M. (2007). Technology acceptance model and e-learning. *Technology*, *21*(24), 81.
xvii. McKee, C. W., Johnson, M., Ritchie, W. F., & Tew, W. M. (Eds.). (2013). *The Breadth of Current Faculty Development: Practitioners' Perspectives: New Directions for Teaching and Learning, Number 133*. John Wiley & Sons.
xviii. Mikre, F. (2011). The roles of information communication technologies in education: Review article with emphasis to the computer and internet. *Ethiopian Journal of Education and Sciences*, *6*(2), 109-126.
xix. Molenda, M. (2003). In search of the elusive ADDIE model. *Performance improvement*, *42*(5), 34-37.
xx. Moon, J. (2001). PDP working paper 4: Reflection in higher education learning. *Higher Education Academy*, 1-25.
xxi. Mullan, J., Harries, D., Bräunl, T., & Whitely, S. (2011). Modelling the impacts of electric vehicle recharging on the Western Australian electricity supply system. *Energy policy*, *39*(7), 4349-4359.
xxii. Ojokheta, K. (2020). Developing a National Strategic Framework for Implementing Lifelong Learning Component of SDG 4-Education 2030 Agenda in Nigeria. *Journal of Pedagogy, Andragogy and Heutagogy in Academic Practice/ISSN: 2708-261X*, *1*(2), 79-94.
xxiii. Quintana, C., Zhang, M., & Krajcik, J. (2005). A framework for supporting metacognitive aspects of online inquiry through software-based scaffolding. *Educational Psychologist*, *40*(4), 235-244.
xxiv. Salovaara, H. (2005). An exploration of students' strategy use in inquiry-based computer-supported collaborative learning. *Journal of computer assisted learning*, *21*(1), 39-52.
xxv. Stratton, P., Reibstein, J., Lask, J., Singh, R., & Asen, E. (2011). Competences and occupational standards for systemic family and couple's therapy. *Journal of Family Therapy*, *33*(2), 123-143.
xxvi. Tsai, M. J. (2009). The model of strategic e-learning: Understanding and evaluating student e-learning from metacognitive perspectives. *Journal of Educational Technology & Society*, *12*(1), 34-48.
xxvii. Van Merriënboer, J. J. (1997). *Training complex cognitive skills: A four-component instructional design model for technical training*. Educational Technology.
xxviii. Wilson, G., & Stacey, E. (2004). Online interaction impacts on learning: Teaching the teachers to teach online. *Australasian journal of educational technology*, *20*(1).
xxix. Woods, K. (2020, July). The development and design of an interactive digital training resource for personal tutors. In *Frontiers in Education* (Vol. 5, p. 100). Frontiers.