UNAM
UNIVERSITY OF NAMIBIA

FACULTY	**FACULTY OF EDUCATION & HUMAN SCIENCES**		
DEPARTMENT	**Applied Educational Sciences**		
SUBJECT	**Educational Technology I (Specialization)**		
SUBJECT CODE	**E3762AT**		
DATE	**October 2025**		
DURATION	**3 Hours**	**MARKS**	**100**

Regular Examination

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This Exam paper consists of **12 pages,** excluding this cover page.

Instructions

1. Read all instructions carefully
2. You must answer all the questions
3. Write neatly and legibly
4. Please be reminded that cheating in the examination will result in your exam being declared null and void

SECTION A

Question 1: Multiple Choice Questions

Answer all questions. Just write a letter of the correct answer next to the corresponding question (e.g. 1.3 A)

1.1 Which of the following best distinguishes "educational technology" from "instructional technology" in the context of Namibian K-12 education? (1)

A. Educational technology focuses solely on hardware and software, while instructional technology refers to pedagogical methods.
B. Instructional technology is a subset of educational technology that specifically supports teaching and learning processes.
C. Educational technology only applies to tertiary institutions, whereas instructional technology is used in primary and secondary schools.
D. Instructional technology excludes digital tools and relies only on traditional teaching aids like chalkboards.

1.2 A primary school teacher in a rural school in Omusati Region wants to integrate feasible educational technology despite limited internet access. Which one of the following would be the most appropriate and sustainable option?

(1)

A. Using cloud-based Google Classroom for daily assignments
B. Implementing virtual reality (VR) headsets for science lessons
C. Utilising offline digital resources such as pre-loaded tablets with curriculum-aligned content
D. Streaming YouTube videos during every lesson for visual learning

1.3. What is a key challenge in defining "digital learning" in the Namibian context? (1)

A. Digital learning is universally defined and requires no contextual adaptation.
B. There is an overabundance of high-speed internet in all regions, making definitions irrelevant.
C. The term is often conflated with simply owning devices, rather than how technology enhances pedagogy.
D. Digital learning is banned under the Namibian education policy.

1.4 Which one of the following best describes the *spirit and essence* of Namibia's ICT in Education policy? (1)

A. To replace all teachers with AI systems by 2030
B. To ensure equitable access to ICT for teaching, learning, and administration across urban and rural schools
C. To prioritise ICT use only in elite private schools
D. To outsource all curriculum delivery to foreign e-learning platforms

1.5 A school in the Kavango East region plans to implement a digital learning program? To do what?. Which legal framework should they consult to ensure compliance with data protection? (1)

A. The Namibia Data Protection Bill
B. The United States' Children's Online Privacy Protection Rule (COPPA)
C. The European GDPR only, as it is the strictest
D. No legal framework is needed for school-level digital projects

1.6 What is a major challenge in implementing the ICT policy for education in Namibian schools? (1)

A. Over-supply of trained ICT teachers in rural areas
B. High levels of teacher readiness and enthusiasm for digital tools
C. Urban-rural disparities in infrastructure, electricity, and internet connectivity
D. Excessive funding with no projects to implement

1.7 A Grade 5 teacher in Keetmanshoop uses a quiz app that gives instant feedback and rewards points for correct answers. Which learning theory does this practice most closely align with? (1)

A. Constructivism
B. Cognitivism
C. Connectivism
D. Behaviourism

1.8 Which theoretical framework would best help a teacher decide how to integrate a simulation tool in a Grade 10 Biology class to teach cell division? (1)

A. SAMR Model
B. TPACK Framework
C. ADDIE Model
D. School Lesson Plan

1.9 A school adopts a new LMS and moves all notes online. However, teaching methods remain unchanged, with lectures followed by printed worksheets. According to the SAMR model, at which level is technology integration occurring? (1)

A. Redefinition
B. Modification
C. Augmentation
D. Substitution

1.10. A Grade 2 teacher in a low-resource school wants to use digital pedagogy effectively. Which approach would be most appropriate? (1)

A. Assigning each learner to build a VR model of the solar system
B. Using a single tablet with an interactive phonics app for small group rotations
C. Requiring learners to write blogs about their weekend
D. Conducting weekly Zoom meetings with parents

1.11. Which of the following best defines **digital pedagogy** in the Namibian context? (1)

A. The replacement of teachers with digital systems
B. The strategic integration of technology to enhance teaching and learning processes
C. The use of any electronic device in the classroom
D. The exclusive use of online platforms for all instruction

1.12. A teacher uses a flipped classroom model where learners watch recorded lessons at home and do problem-solving in class. This approach aligns most closely with which pedagogical model? (1)

A. Behaviourist drill-and-practice
B. Traditional lecture method
C. Constructivist inquiry-based learning
D. Rote memorisation strategy

1.13. A schoolteacher in Swakopmund wants to use VR to teach Geography. What is a major **ethical consideration**? (1)

A. VR headsets are fashionable and may distract learners
B. Learners might become too excited during VR lessons
C. Data privacy and consent when using platforms that collect user behaviour
D. VR is too colourful and engaging

1.14. Mobile learning (m-learning) can be especially beneficial in Namibia because: (1)

A. All learners' own smartphones
B. It supports ubiquitous learning in areas with limited school access
C. It replaces the need for teachers
D. It is only useful in urban areas

1.15. A school uses a Learning Management System (LMS) primarily for posting homework. Which administrative function is underutilised? (1)

A. Communication with parents
B. Monitoring learner progress and generating reports
C. Printing worksheets
D. Conducting staff meetings offline

1.16. Which ICT tool can reduce time-tabling challenges in a secondary school? (1)

A. A handwritten timetable on a classroom wall
B. Allowing learners to choose their own classes daily
C. Announcing schedules verbally each week
D. A digital time tabling software with conflict-detection features

1.17. In a Namibian rural school where electricity is intermittent and internet access is limited, a teacher uses a solar-powered projector to show pre-downloaded science animations. How would this integration be theoretically classified within the framework of educational technology? (1)

A. As a form of digital learning, it involves digital content delivery
B. As instructional technology, it directly supports pedagogical objectives with technological mediation
C. As educational technology, but not instructional technology, because it does not involve learner interaction
D. As an emergent technology due to the use of solar power

1.18. A Ministry of Education official argues that "digital learning" in Namibia should be defined not by device ownership but by cognitive engagement with digital tools. Which philosophical underpinning best supports this view? (1)

A. Technological determinism – technology shapes learning outcomes directly
B. Digital essentialism – all learning must be digitized to be valid
C. Behaviourist conditioning – digital repetition leads to learning
D. Constructivist instrumentalism – technology is a tool for active knowledge construction

1.19. A donor-funded ICT project in Oshana Region provides tablets to schools but fails after two years due to a lack of maintenance and teacher training. Which policy implementation failure does this exemplify? (1)

A. Misalignment between strategy and policy spirit
B. Overemphasis on urban schools
C. Absence of a sustainability clause in the implementation plan
D. All of the above

1. 20. A school adopts a new LMS but uses it only to post PDFs of worksheets. According to the **TIM** (Technology Integration Matrix), at which level is this practice? (1)

A. Transformation
B. Adoption
C. Entry
D. Infusion

Total Marks: [20]

Question 2: True or False

Please state whether the following statements are True or False. Simply write the correct answer next to the number of the question (e.g. 1. True)

2.1 The Acceptable Use Policy (AUP) and End-User License Agreement (EULA) are one and the same thing. (1)

2.2 A teacher who uses a digital quiz app that adapts question difficulty based on learner performance is primarily applying principles of behaviourism, as the app provides immediate reinforcement for correct answers. (1)

2.3 The TPACK framework is more useful than learning theories alone for Namibian teachers because it integrates technological, pedagogical, and content knowledge in a way that addresses real classroom complexities. (1)

2.4 Gamification in a Grade 7 mathematics class where learners earn badges for completing exercises can promote deep learning even if the tasks remain at the recall level, because the motivational elements enhance engagement. (1)

2.5 A teacher who creates a class blog for learners to post reflections on environmental issues is primarily developing their digital citizenship and 21st-century skills, which supports Namibia's broader socio-economic development goals. (1)

2.6 If a teacher uses a digital quiz app to deliver multiple-choice questions with instant feedback, this practice can be classified as "Modification" on the SAMR model if the quiz is taken on a tablet instead of paper. (1)

2.7 Web 2.0 technologies, such as blogs and wikis, support constructivist learning because they enable collaboration, content creation, and knowledge sharing among learners. (1)

2.8 The Namibia Data Protection Bill, though not yet enacted, has no bearing on how schools currently use digital platforms like Google Classroom or WhatsApp for teaching and communication. (1)

2.9 A teacher who integrates a virtual reality (VR) simulation of the human circulatory system into a Grade 11 Biology lesson is automatically practising at the "Redefinition" level of the SAMR model, regardless of how the tool is used. (1)

2.10 The TPACK framework is only relevant for teachers who have access to high-end technologies like smartboards and 1:1 devices, and therefore has limited applicability in low-resource Namibian schools. (1)

[Total: 10 Marks]

Question 3: Matching

Match the terms in Column A with the descriptions in Column B. Simply write the question number in Column A and the letter of the matching answer in Column B.

Column A	Column B
3.1 Digital Learning	A. Evaluates a teacher's ability to integrate technology, pedagogy, and content in a multilingual Grade 6 science lesson.
3.2 Instructional Technology	B. Learners in a Grade 11 class co-create a wiki on indigenous plant knowledge, integrating science and local culture.
3.3 Connectivism	C. This concept is often misunderstood as simply "using computers," leading to policy failures in rural implementation.
3.4 Constructivism	Incorporates five interdependent characteristics of meaningful learning environments
3.5 TPACK Framework	D. Learners in a rural school use mobile phones to access a network of peer tutors across regions via an educational app.
3.6 SAMR Model	E. An interactive simulation used to teach photosynthesis in a Grade 10 class is a direct application of this.
3.7 ICT in Education Policy	F. A teacher designs a lesson using an AI tutor that adjusts problem difficulty based on learner performance, to support learners' comprehension abilities.
3.8 Cognitivism	G. A teacher redesigns a History project so learners create a digital documentary using primary sources, a task previously impossible.
3.9 E-Portfolio	H. A national framework that guides the integration of information and communication technologies in teaching, learning, and school administration.
3.10 Intellectual Property	I. A collection of learner work in digital format, used to showcase skills, track progress, and support assessment.
	J. A teacher discusses with learners how to cite sources and avoid plagiarism when using online content for projects.
	K. Digital tools help close the urban-rural education gap by delivering quality content to underserved schools.

Sub-total: 10

[Section A Sub-total: 40 marks]

SECTION B

Question 4: Short Answer Questions

4.1 Read the Namibian newspaper headline of 19 June 2023. Answer the questions below.

'Infrastructure vital in providing quality education'

Faustina Caley

By Feni Hiveluah
19 June 2023

Trending Stories

1 Nandi-Ndaitwah recycles old guard as new Namibian ambassadors

2 PDM's Venaani denies ambassadorial offer amid party resignations and speculation over ministerial post

3 Oshana mother's horror as taxi driver kills baby

4 Former Fishrot trial judge

4.1.1 According to your understanding, infer why limited ICT infrastructure may be a barrier to quality education? (4)

4.1.2 Identify three barriers to effective ICT adoption in Namibian schools and propose one solution for each. (6)

4.1.3 How does the evolution from audio-visual aids to digital learning reflect changing learner expectations in Namibian schools? (4)

[Marks: 14]

4.2 Read and analyse the following scenario of teacher Tjikuzu and answer the questions that follow.

Mr. Tjikuzu teaches Natural Sciences at a well-resourced school in Swakopmund. His class is studying the human circulatory system. He uses the SAMR model to progressively integrate technology into the learning process. His lesson planning is as follows:

Lesson Plan Using the SAMR Model:

Substitution:	Learners read a digital PDF worksheet on the heart and blood vessels instead of a printed textbook.
Augmentation:	They use an interactive 3D anatomy app (e.g., *Visible Body*) on tablets to explore the heart's structure and watch animated blood flow.
Modification:	In groups, learners design a digital "Health Campaign" using PowerPoint or Canva, incorporating self-recorded videos explaining how lifestyle choices (diet, exercise) affect heart health.
Redefinition:	Students host a live virtual science fair with a rural school in Kavango East (partnered via a government e-learning initiative). They present their projects via Zoom, answer questions, and receive peer feedback. They also upload their videos to a shared YouTube playlist accessible to parents and the community.

4.2.1 How does the use of a 3D anatomy app represent Augmentation rather than just Substitution in the SAMR model? (2)

4.2.2 Analyse how the **Modification** stage fosters student creativity and scientific communication. (2)

4.2.3 Evaluate the impact of the virtual science fair on learners' motivation and authentic learning. (2)

4.2.4 How does this lesson exemplify redefinition in technology integration, and what 21st-century skills does it develop? (2)

4.2.5 How does the integration of student-created videos on heart health support constructivist learning theory? (2)

[Marks: 10]

4.3 Please answer all the questions below:

4.3.1 Using the TPACK framework, evaluate how effectively a Grade 10 Science teacher integrates a PhET simulation on photosynthesis in a mixed-ability class in Windhoek. (3)

4.3.2 Ms. Nangolo is a Grade 5 teacher at Nkurenkuru Primary School, a rural school with no internet, intermittent electricity, and only two solar-charged tablets shared among six classes. She uses a pre-loaded Kolibri app with curriculum-aligned science and math content. Recently, the school received a donation of offline educational videos on USB drives. Ms. Nangolo wants to integrate these tools effectively but faces challenges with teacher readiness and learner access.

Identify 5 ethical considerations Ms. Nangolo should keep in mind before using the donated USB drives, especially if they contain content from international sources. (5)

4.3.3 Mr. Iyambo teaches Grade 10 Geography at Windhoek High School, which has Wi-Fi, a Learning Management System (LMS), and 1:1 tablets. He uses Google Classroom to post assignments, Google Earth for virtual field trips, and AI-powered quizzes for formative assessment. However, some learners misuse devices for social media, and parents have raised concerns about data privacy. Mr. Iyambo wants to write a school-based Acceptable Use Policy (AUP). Explain how an AUP would address this issue. (3)

4.3.4 Ms. Masule plans to get learners to create a class blog on climate change. Draft a guiding plan for the learners to follow in developing their blog. The plan should consist of 5 components. (5)

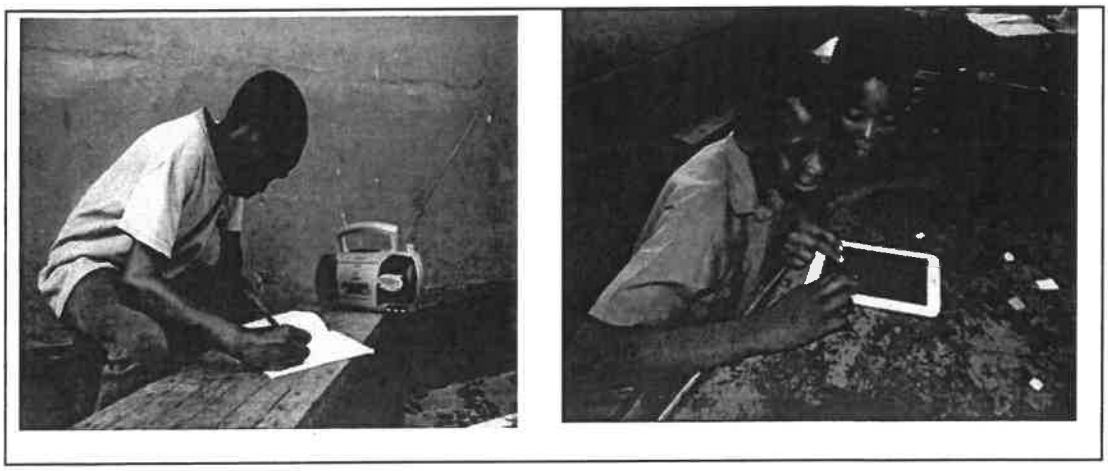
[Marks: 20]

[Section B sub-total: 40 marks]

SECTION C

Question 5

5. Compare the two educational technologies shown



5.1. Explain how each educational technology reflects the historical development of EdTech in Namibia. Based on infrastructure realities, justify why the tablet-based system may *not* be feasible in a rural Namibian school. (8)

5.2 Explain how the use of an interactive touch smart board in a public school to simply display PowerPoint slides may be considered ineffective in supporting active learning. (2)

5.3 Briefly discuss five strategies teachers can use to effectively adopt new technologies in the classroom. (10)

[Marks: 20]

[Section C Sub-total: 20 marks]

[Grand Total for Question Paper: 100 Marks]