CPD QTS MATERIALS

Workbook for Teachers

Part Time In-Service QTS Programme
Professional Studies

Course 1: How Children Learn

(5 days, 1 Credit)

South Sudan

Contents

It's important to see all five modules in overview and see how each connects with each other and the previous courses on how children learn.

Module 1:
Course Intro

This module explores the nature of the route to Qualified Teacher Status through this part-time, in-service training course. You will be introduced to the ways in which we will work and important aspects of accreditation and assessment.

Course 1: How Children Learn

Module 1: Course Intro

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Key Points:

- The curriculum is made up of a number of elements, not just a collection of facts.
- The Professional Studies Programme is made up of 8 interactive courses.
- Each Course within the programme has 5 modules, except course 7 which has 4.
- Assessments and certification leading to Qualified Teacher Status will be demonstrated through the use of a Professional Portfolio alongside visits and conversations with tutors and school leaders.
- This in-service CPD course is based on the Initial Teacher Training programme.
- This in-service course has been condensed from a full-time 2-year course into 60 days to be spread across 8 weeks of tutored courses and a further 20 days of study.

Outline

Session	Content
1	Welcome and introductions to the course • *Activity 1 Getting to know you*
2	Professional Standards for Teachers • *Activity 2 Applying standards in my school* • *Activity 3 General Education Act*
3	Rich Learning • *Activity 4 Describing Flowers in Science* • *Activity 5 Stories and Songs*
4	Assessment and Portfolio • *Activity 6 Assessment classification*

Resources

Curriculum Framework
ECD Curriculum and Guidance

Part Time QTS Programme

Course Structure

There will be a three-part route to QTS for unqualified serving teachers who have passed the access threshold for proficiency in English and basic subject knowledge.

Part 1	**Professional Studies**	40 Days (8 x 5 days)	8 Credits
Part 2	**Specialist subject study**	10 Days (5 days taught plus 5 days personal study)	2 Credits
Part 3	**Classroom practice**	10 Days (equivalent)	2 Credits

- **The Professional Studies Course** will cover the key parts of the Pre-Service Certificate Course. This will be divided into a number of modules. Each module will give the teachers something to implement in the classroom and evaluate before the next module is started.
- **The Specialist subject study** will enable the teacher to develop a specialism in a subject area or in the ECD. It will equate to the 'Personal Study' element of the Full-Time Certificate Course.
- **The Classroom practice** element will involve the teacher in planning, preparing, implementing and evaluating an aspect of the course in their classroom or school. This will give the opportunity for their teaching to be assessed, and this is a key factor in awarding QTS.

Course Outline

Proposed Professional Studies Course

1. How children learn	**2. Curriculum expectations**	**3. Teaching and learning**	**4. Language development**
5 days	**5 days**	**5 days**	**5 days**
1 Credit	**1 Credit**	**1 Credit**	**1 Credit**
Theory of learning – with a focus on young children – in the context of the curriculum	What are the key features of the SS School and ECD curriculum?	The art and science of teaching (pedagogy)	How do young children learn to speak, listen, read, and write?
a) Course introduction 1. Curriculum Framework and syllabuses 2. Learning theories 3. Knowledge, Skills and Understanding 4. Higher-Order Thinking Skills	1. The four Competencies 2. Syllabus format 3. Cross-cutting Issues and school programmes 4. Textbooks 5. First-hand experiences and active learning	1. The 3 principles of planning 2. Creating learning opportunities in an enabling environment 3. Encouraging creativity & independence 4. Questioning 5. A repertoire of strategies	1. Theory background & the importance of talk 2. Learning in a national language & the transition to English 3. Pre-reading & Pre-writing 4. Developing reading 5. Developing writing

5. Learning Areas and Subjects (1)	**6. Learning Areas and Subjects (2)**	**7. Assessment**	**8. Inclusion**
5 days	**5 days**	**5 days**	**5 days**
1 Credit	**1 Credit**	**1 Credit**	**1 Credit**
The background and key approaches to the language subjects and Learning Areas	The background and key approaches to the other primary subjects	How do we find out if learners have achieved the learning outcomes?	A focus on inclusion, special educational needs, and gender equity
1. ECD Areas 2. English P1-3 3. English P4-5 4. National Language 5. Religious Education	1. Maths 2. Science 3. Social Studies 4. Arts 5. PE	1. Principles of assessment 2. Assessment methods (including examinations) 3. Using assessment to improve learning 4. Keeping and analysing assessment records	1. Special educational needs and disabilities (SEND) 2. Gender equity 3. Creating inclusive environments 4. AES programmes

Professional Studies Outline

Course 1: How children learn	Course 2: Curriculum expectations	Course 3: Teaching and learning
• Understand the implications of the four aims for teaching and learning • Understand how the Curriculum Framework puts the subjects into a broader context • Understand how the Subject Overviews and Syllabus units set out the expected learning • Understand how ECD Curriculum and Guidance sets out learning for PP1 & PP2 • Understand the three key theories of learning • Understand how the theories underpin what happens in the classroom • Understand the nature of Knowledge, Understanding and Skills and the differences between them • Understand how each of these needs to be taught and learned, and plan learning activities appropriate to each • Understand why critical thinking and problem solving are key parts of the SS curriculum and to the learning process • Identify opportunities for critical thinking and problem solving in the syllabuses • Plan learning activities that promote critical thinking and problem solving	• Understand the four competencies and why they are in the ECD and Primary curriculum • Design learning activities that will promote the competencies in a range of Learning Areas and subjects • Understand how the subject syllabuses have been planned to identify key learning each year, and provide progress from P1 to S4 • Understand the importance of the three Cross-cutting Issues and how these relate to the subjects • Understand the reason for and scope of school programmes • Promote a school programme within a school • Understand the layout and design of the South Sudan textbooks and Teacher Guides • Relate the textbooks to the syllabus units and learning outcomes • Design lessons that include use of textbooks • Design some activities that extend learning beyond the textbooks • Understand why first-hand experiences and active learning are important within the SS curriculum • Design some learning activities that involve first-hand experiences and active learning	• Understand, apply, and design learning activities the three principles of planning • Understand the nature of learning opportunities for different forms of learning and the range that can be created • Create appropriate learning opportunities within the SS curriculum • Understand what is meant by creativity, and design some learning activities that promote creativity • Understand why it is important for learners to have some independence in their learning, and why the SS Curriculum Framework requires this • Design some learning activities that promote independent learning • Understand the importance of questioning and relate this to the theories of learning in Course 1 • Understand that there are different sorts of questions (open, closed etc.) • Devise some questions that promote the higher levels of learning in a range of situations • Understand why different strategies are needed for different situations • Identify the approaches needed for some different situations and parts of the curriculum • Design some strategies to address different needs

Course 4: Language development	Course 5: Learning Areas and Subjects (1)	Course 6: Learning Areas and Subjects (2)
• Be aware of the four key theories of language development, and understand why the semantic-cognitive theory is now most widely accepted • Be able to relate the theory to promoting language development in the classroom • Understand the reasons for learning to read and write in a national language before transitioning to English • Understand the key teaching and learning approaches for learning in a national language • Understand challenges facing young people in the transition to English and the language of instruction and how to support them • Understand the principles of pre-writing and pre-writing activities, and the advice given for these activities in the South Sudan ECD curriculum guidance • Understand that children of any age need these activities before they can learn to read and write • Plan pre-writing and pre-writing activities • Understand what is involved in the development of early writing skills and the requirements of the SS curriculum in terms of early writing • Plan some learning activities that will promote early writing skills • Make use of the SS textbooks to promote writing	• Be familiar with the seven ECD Learning Areas and the key approaches to each Area • Be able to design some activities within some of the Areas • Understand the key approaches and requirements of the teaching and learning of English in P1-3, and be familiar with the textbooks for the subject • Be able to design learning activities for reading, writing, speaking and listening in P1-3 • Understand the key approaches and requirements of the teaching and learning of English in P4-8 • Be familiar with the textbooks for the subject • Be able to design learning activities for reading, writing, speaking and listening in P4-8 • Understand the key approaches and requirements of the teaching and learning of a National Language • Be familiar with the textbooks for the subject • Be aware of the implications for other subjects • Understand the key approaches and requirements of the teaching and learning of Religious Education • Be aware of the implications for teaching and learning	• Understand the key approaches and requirements of the teaching and learning of Mathematics • Be familiar with the textbooks for the subject • Be able to design learning activities for Maths • Understand the key approaches and requirements of the teaching and learning of Science • Be familiar with the textbooks for the subject • Be able to design learning activities for Science • Understand the key approaches and requirements of the teaching and learning of Social Studies • Be familiar with the textbooks for the subject • Be able to design learning activities for Social Studies • Understand the key approaches and requirements of the teaching and learning of The Arts • Be able to design learning activities for the subject • Understand the key approaches and requirements of the teaching and learning of PE • Be able to design learning activities for the subject

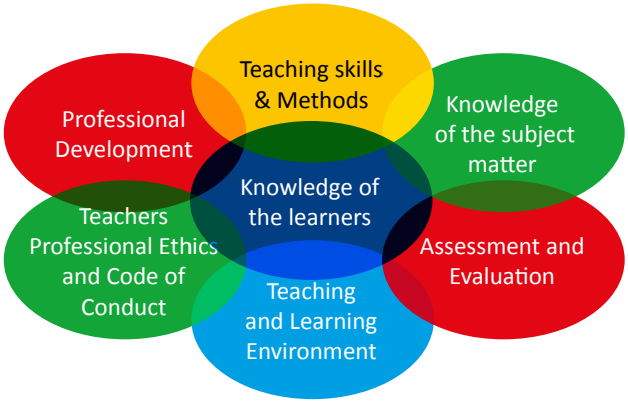
Course 7: Assessment	Course 8: Inclusion
• Understand the different forms of learning and their implications for assessment • Be aware of the different purposes and types of assessment • Be aware of approaches such as “Authentic Assessment” and “Assessment for Learning” • Be able to apply the methods explained in the South Sudan Assessment Guidance booklet • Relate the methods to a range of Learning Outcomes in the Upper Primary syllabuses • Understand how examination papers are developed and the demands of the questions • Recognise where learning needs to be improved • Be able to give encouraging and effective feedback so that learners know what to do to improve • Design support to meet identified learning needs • Understand the requirements for keeping assessment records • Be able to analyse patterns in assessment records	• Identify different special needs they might encounter • Design programmes and approaches that can help address these needs • Be familiar with the issues surrounding gender equity in schools • Be aware of the programmes that exist to promote gender equity • Understand the key features and importance of an inclusive environment • Be able to create an enabling environment in the classroom. • Understand the nature of the Programmes and their importance in including all young people in education

National Professional Standards for Teachers in South Sudan (September 2012)

Introduction

These standards describe expectations for effective teachers in South Sudan. The term 'teacher' as used in this document means 'effective teacher' inclusive of the seven domains of the professional standards.

The standards are not intended to show isolated knowledge or skills and are not presented in order of importance. Teacher's knowledge and skills in each standard area will impact their ability to perform effectively in the other standard areas. Each of these standards is important for effective teaching.



Teaching and Learning

Standard 1: Knowledge of the learners and how they learn

Teachers should have a knowledge of the learners they teach: their growth and development, learning processes and use of this knowledge in planning lessons and facilitating their learning processes.

Description

Teachers must demonstrate a good understanding of learning processes, theories and principles and their application in the classroom. This enables them to design appropriate teaching and learning activities that are learner-centred. Teachers must connect their teaching to the learners' prior knowledge, needs and interests.

Application

1.1 Teachers must be knowledgeable of the development needs of the learner including physical, psychological, socio-economic and intellectual development

1.2 Teachers use knowledge of learning processes, theories and principles to plan and deliver lessons

1.3 Teachers demonstrate knowledge that learners have different learning capacities and use different learning methods to meet the diverse needs of learners in the classroom

1.4 Teachers demonstrate respect for learners' diverse cultures, religion, languages and experiences

1.5 Teachers know that all learners can achieve their full potential and guide plans of instruction towards this goal

1.6 Teachers treat learners with dignity; build good relationships and support their academic achievement.

Standards 2: Knowledge of the subject being taught

Teachers have mastery of the subject for which they have teaching responsibility.

Description

Effective teachers have a deep understanding of the subject matter and have confidence in communicating it to the learners. Teachers make content of the subject matter meaningful, relevant and applicable to real life experiences of learners.

Application

2.1 Teachers know the content they teach and use their knowledge of subject specific concepts, assumptions and skills to plan teaching and learning

2.2 Teachers understand and use a variety of teaching strategies to effectively teach the central concepts and skills of the discipline

2.3 Teachers have a good understanding of the national curriculum goals, priorities and subject standards.

2.4 Teachers demonstrate good knowledge about relationships among subjects

2.5 Teacher connect subject content to relevant life experiences (and career opportunities).

Standard 3: Teaching Methods

Teachers plan and deliver effective teaching that engages and advances the learning of the individual learner and the community. They apply appropriate teaching methods to different groups of learners.

Description

Teacher have high expectations for all learners, therefore, use a variety of teaching strategies that actively engage them and promote a love of learning. Teachers reflect on their teaching and learners' outcomes to make appropriate decisions which result in increased academic achievement. Techers correctly design a logical scope and sequence for learning.

Application

3.1 Teachers develop teaching objectives and activities that are in line with national education principles.

3.2 Teachers create and select activities designed to develop learners as independent learners and problem solvers and adapt their teaching to respond to learners' strengths and needs.

3.3 Teachers use relevant and appropriate teaching and learning materials from locally available resources effectively and make use of available technologies to enhance learning

3.4 Teachers use participatory teaching and learning activities relevant and meaningful to learners and relate them to everyday lives by using real life stories, local examples and materials

Standard 4: Assessment and Evaluation Methods

Teachers understand and use varied assessment tools to evaluate learners and use results to improve instruction.

Description

Teacher understand the meaning and purpose of assessment and use multiple assessment methods to learn about their learners, to evaluate learning and to plan and adjust instruction. They use formal and informal assessment to gauge learning and determined the academic progress of learners. They keep accurate records of learners' assessment results. Teachers report assessment results to parents, head teachers and other educational administrators.

Application

4.1 Teachers are able to design valid and reliable assessment instruments

4.2 Teachers use different assessment methods, and use the data generated from the assessment to improve teaching and learning.

4.3 Teachers apply (formal and) informal assessment in their lessons to gauge learners' progress on a regular basis.

4.4 Teachers keep accurate records and analyse the data to make decisions on learners' progress, to plan, to differentiate and to modify instruction accordingly.

4.5 teachers collaborate and communicate assessment results to learners, parents, their peers and school officials, school supervisors and inspectors.

Standard 5: Learning Environment

Teachers use the existing conditions to create child-friendly learning environments that are conducive to learning.

Description

Teachers treat all learners fairly and establish an environment that is respectfully, supportive, caring, and physically and emotionally safe. They create learning situations in which learners work independently, collaboratively or as a whole class, and motivate the learners to work productively and assume responsibility for the own learning. They maintain an environment that is conducive to learning for all learners.

Application

5.1 Teachers treat all learners fairly and establish an environment that is respectful, supportive and caring to include differences in gender, ethnicity, language, culture, religion and ability.

5.2 Teachers create learning environments that are physically and emotionally safe.

5.3 Teachers create learning situations in which learners work independently, collaboratively or as a whole class

5.4 Teachers maintain an environment that is conducive to learning for all learners including those with special needs

5.5 Teachers ensure disruptive behaviours and indiscipline are discouraged and managed.

Teaching as a Profession

Standard 6: Professional Responsibility and Growth

Teachers assume responsibility for their own professional growth as individuals and as members of a learning community.

Description

Teachers are professionals who must understand that they are in a unique and powerful position to influence the future of their learners and the communities. Teachers are continuously engaged in their own professional development and contribute to the teaching profession. Teachers serve their school and surrounding communities in various leadership roles. They ensure the transmission of cultural heritage, values, customs and tradition of their immediate community and of South Sudan as a whole. Teachers foster ongoing collaboration with their peers and serve as change agents in the learning communities.

Application

6.1 Teachers are continuously engaged in their own professional development at various levels.

6.2 Teachers contribute to ongoing collaboration with their peers and to the teaching profession.

6.3 Teachers are exemplary and service a model of good citizenship for their learners and the community.

6.4 Teachers seek knowledge about and contribute to the heritage, values, customs and traditions of South Sudanese society

6.5 Teachers are aware of the importance of psychological issues such as child abuse, forced labour at home, rights of learners, and take account of these in teaching

6.6 Teachers have a basic knowledge of the educational goals, as contributing factors to quality education in the context of national policies in South Sudan

Standard 7: Teachers' Code of Conduct and Professional Ethics

Teachers are aware of the South Sudan Professional Code of Conduct and exhibit high standards of personal integrity and professional ethics.

Description

Teachers shall all carry out responsibilities with a high degree of professionalism that promotes a high standard of learning; thus contributing towards achievement of the strategic goal of building an educated an informed nation. They must observe the standards of behaviour and conduct as established in the Ministry's Teachers' Code of Conduct. As role models in society, teachers must practice the highest standards of integrity, fairness and honesty.

Application

7.1 Teachers apply the rules and policies of the Ministry of General Education and Instruction.

7.2 Teachers have regard for the need to safeguard for the policies and practices of the school in which they teach

7.3 Teachers have proper and professional regard for policies and practices of the school in which they teach

7.4 Teachers promote and maintain effective relationships with parents, members of the school community, as well as persons and bodies outside the school that may have a stake or interest in the school

7.5 Teachers practice the highest standards of integrity, honesty, fairness and maintain high standards in their own attendance and punctuality

7.6 Teachers plan and execute duties with diligence, commitment, dedication, fairness and at all times observe proper boundaries appropriate to a teacher's professional position.

Professional Studies Assessment

Section 1: Background

Assessment of the Professional Studies element will be based on the school-based activities that participants will carry out between each course. Each 5-day course will have an assessment activity.

The focus of the QTS Programme (like the school curriculum itself) is on enabling participants to **apply** their learning in the school situation. Assessment will therefore focus on the ability to apply, rather than on being able to remember, aspects of the course.

During the final day of each course, time will be given to preparing the school-based activity and ensuring that participants understand the assessment requirements.

Evidence for the assessment will come from a **portfolio** or presentation that participants will submit that shows how they have applied particular parts of the course in school. The portfolios can be written or electronic, and can contain a range of relevant materials such as photographs, examples of learners' work, lesson plans, etc.

The requirements and grade descriptions for each assessment activity are set out below. These will be made available to all participants at the beginning of the course.

There will be three assessment classifications:

- **Distinction** – The portfolio covers each of the requirements very effectively and shows very good ability to apply the course in the school.
- **Credit** – The portfolio covers each of the requirements sufficiently and shows ability to apply the course in the school.
- **Re-submit** – The portfolio does not cover the requirements and gives insufficient evidence of ability to apply the course in the school.

The grade will be awarded on the basis of **best fit** with the criteria set for each course.

Each portfolio will be assessed by a tutor other than the one who has run the course, and assessment will be moderated by a lead tutor. Accreditation for each stage of QTS will be ratified by the Ministry of General Education and Instruction. Participants will be given written and oral feedback on their portfolios

Participants will be encouraged to work with their headteacher or other colleagues in preparing the portfolio. It should not be seen as traditional examination but as an opportunity for the participants to show how well they can apply their learning in the school situation.

Being asked to re-submit will not prevent a participant from taking part in the next course.

The Assessment Activities

Course	Assessment Activity
1. How children learn	**Simple written task.** Select at least four syllabus units and identify where there are opportunities for critical and creative thinking and relate these to the learning theories that have been studied.
2. Curriculum expectations	**Plan and implement learning activities** to promote student competencies in one or more subjects or Areas of Learning. The implementation could be in one lesson or in a series of lessons across a syllabus unit. They should plan the activity, specifying the learning outcomes sought, relating it to the learning theory, and taking account of what the challenges are in relation to implementation and what solutions can be developed.
3. Teaching and learning	**Plan, implement and evaluate** some learning activities that promote independent learning. The implementation could be in one lesson or in a series of lessons across a syllabus unit. They should plan the activity, specifying the learning outcomes sought, relating it to the learning theory, and taking account of what the challenges are in relation to implementation and what solutions they have developed.
4. Language development	***Either:*** **Plan, implement and evaluate** a series of pre-reading and pre-writing activities ***Or*** **Plan, implement and evaluate** a series of activities that will promote early reading and writing skills
5. Learning Areas and Subjects (1)	**Plan, implement and evaluate** a series of learning activities that take learning beyond the textbooks for one subject from Course 5
6. Learning Areas and Subjects (2)	**Plan, implement and evaluate** a series of learning activities that take learning beyond the textbooks for one subject from Course 6
7. Assessment	**Plan and implement assessment activities** and give feedback to learners according to the South Sudan Guidance. Present a portfolio that explains the process, illustrate it with learners' work where appropriate, relate it to the theory and identify the challenges faced.
8. Inclusion	As this is the final course, there is no between-course task. The assessment will be based on a **portfolio** that: • explains the steps a teacher and the school as a whole should take to promote gender equity. • sets out a plan for an ideal classroom that has a positive and helpful enabling environment, and explains how this relates to the guidance and theory. • Considers the challenges and solutions and relates this to the guidance and theory

Session 1 - Welcome & Introductions to the Course

Activity 1

Getting to know you

Session 2 - Professional Standards for Teachers

Activity 2

Applying standards in my school

Activity 3

General Education Act

Session 3 - Rich Learning Experiences

Activity 4

Describing Flowers in Science

Activity 5

Stories and Songs

Session 4 - Assessment & Portfolio

Activity 6

Assessment Classification

Module 2:
The Curriculum Framework & Syllabuses

This module introduces the curriculum framework and how it provides an integrated curriculum.

Course 1: How Children Learn

Module 2: The Curriculum Framework & Syllabuses

This module introduces the curriculum framework and how it provides an integrated curriculum.

Learning Outcomes

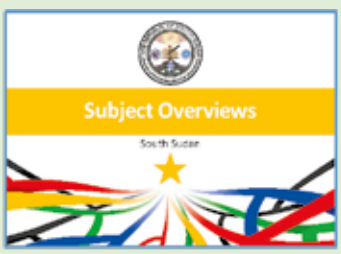
By the end of the module, teachers will be able to:

- understand the implications of the four aims for teaching and learning
- understand how the Curriculum Framework puts the subjects into a broader context
- understand how the Subject Overviews and Syllabus units set out the expected learning
- understand how ECD Curriculum and Guidance sets out learning for PP1 & PP2
- understand the role played by the Cross-cutting Issues

Key Points:

- The curriculum is underpinned by four aims
- The attainment of these aims requires particular teaching and learning approaches (which may be different from traditional ones)
- The curriculum is more than subjects
- The other elements are:
  - Student competencies
  - South Sudan's heritage and culture
  - Cross-Cutting Issues
- These other elements have been built into the subject syllabuses
- The subjects are divided into strands
- These strands form the structure for setting out the expected learning outcomes across the years (P1-S4)
- The ECD curriculum is set out differently, with "Stepping Stones" setting out progression
- The subject syllabus units are based on the expected learning outcomes of the Subject Overviews
- The key documents for this module are:

The Curriculum Framework



Subject Overviews

Sets of Syllabus Units

ECD Curriculum and Guidance

Good citizens of South Sudan

Good citizens of South Sudan who are:

- Patriotic and proud of their rich culture and heritage
- Active participants in society for the good of themselves and others
- Committed to unity, democracy, human rights, gender equity, peace and reconciliation
- Ready to take their place as global citizens, proud of South Sudan's role and position in the world.

Successful life-long learners

Successful life-long learners who are:

- Literate, numerate and keen to learn
- Able to learn independently and with others
- Proficient in the key competencies
- Committed to life-long learning

Creative and productive individuals

Creative, confident and productive individuals who are:

- Enterprising and creative problem-solvers
- Willing to exert the effort that is necessary to success
- Able to relate well to others, and understand others' concerns and needs
- Diligent, resilient and persistent in their attitude to work

Environmentally responsible members of society

Environmentally responsible members of society who are:

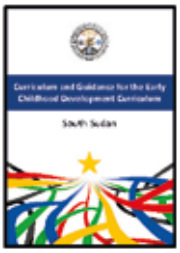
- Committed to sustainable forms of development
- Aware of the fragility of the environment, and the importance of environmental sustainability to life and prosperity
- Appreciative of the need for everyone to work together to preserve the environment for the common good and for future generations

(Page 5 curriculum framework)

Outline

Session	Content
1	Slides – The Framework and the 4 Aims • *Activity 1 - Discuss your own aims* • *Activity 2 - Sort the titles and descriptions* • *Activity 3 - If we want … then …* • *Activity 4 - If we want … then … (different aim)* Slides – South Sudanese heritage and culture • *Activity 5 – What are the key features and importance?*
2	Slides – The competences • *Activity 6 – sort competencies* Slides – The subjects • *Activity 7 – Similarities & differences between ECD and Primary* • *Activity 8– Similarities & differences between Primary and Secondary* Slides –ECD • *Activity 9 – Discuss language expectation in PP1 &2* • *Activity 10 – Discuss Maths expectation in PP1 & 2*
3	Slides – Subject scope and sequence • *Activity 11 – Identify strands in subjects* • *Activity 12 - Expectations in National Language from P1 to P8* • *Activity 13 - Expectations in Maths from P1 to P8* Slides – ECD Stepping Stones • *Activity 14 – Stepping stones*
4	Slides – Syllabus Units • *Activity 15 – Locate syllabus unit in the Subject Overview* • *Activity 16 – How the Learning Outcomes fit with the "Learn About" section.* Slides - Cross-Cutting Issues • *Activity 17 – How **Peace Education** develops across the years* • *Activity 18 – How **Life Skills** develops across the years* • *Activity 19 - How **Environment and Sustainability** develops across the years*

Background information

	**The Curriculum Framework** This is the key curriculum document that applies from ECD to S4. It puts the subjects into a broader context, and sets out all the key requirements: • Aims, values, principles • Subjects at each stage • Student competencies • South Sudan heritage and culture • Cross-cutting issues • Integrated subjects • Approaches to teaching, learning and assessment • Approaches to gender equity and special educational needs
	**The Subject Overviews** These set out the: • Expected learning outcomes for all subjects from P1 to S4 • Subject strands • Key approaches to each subject • Details of cross-cutting issues and integrated subjects
	**The Subject Syllabuses** These give the detail to the learning outcomes set out in the subject overviews. Each unit is based on one or more learning outcome, and sets out: • Key Inquiry Questions – for learners to investigate (not for assessment!) • Learn About – suggesting teaching and learning approaches • Learning Outcomes • Contribution to the competencies • Links to other subjects
	**ECD Curriculum and Guidance** A comprehensive document setting out the expected learning outcomes for PP1 and PP2. It also gives much guidance about teaching and learning approaches and sets out ways of designing practical first-hand learning activities that will engage the interest of young learners. It is important that primary teachers understand the ECD curriculum, because they will then understand the learning background of their own learners, even if they do not teach pre-primary children.

Session 1, Course 1, Module 2

Activity 1

What are your own aims as a teacher?
What do you hope to achieve and what do you hope your learners will achieve?

Activity 1

Sort the titles and descriptions. Which list goes with which title?

Session 1, Course 1, Module 2

Activity 3 and 4

If we want … then …

Activity 5

What are the key features and importance of the South Sudanese culture and heritage that we need to teach to our children?

Session 2, Course 1, Module 2

Activity 7

Similarities & differences between ECD and Primary

Activity 8

Similarities & differences between Primary and Secondary

Session 2, Course 1, Module 2

Activity 9

Discuss language expectation in PP1 &2

Activity 10

Discuss Maths expectation in PP1 & 2

Session 3 & 4, Course 1, Module 2

Activity 11 to 19

Discussion!

Module 3:
Learning and Memory Theories

This module explores the three main theories of learning (Behaviourist, Constructivist and Social Constructivist), relates these to more recent research on the brain, and considers how they impact on classroom practice.

Course 1: How Children Learn

Module 3: Learning and Memory Theories

This module explores the three main theories of learning (Behaviourist, Constructivist and Social Constructivist), relates these to more recent research on the brain, and considers how they impact on classroom practice.

Key Points:

- To know how to teach well, we need to understand how people learn
- Human beings try to make sense of their experiences (construct meaning)
- We develop 'mind maps' or schema of how things fit together
- Learning takes place in a social context and talk is essential to learning
- Early childhood experiences are crucial to later learning
- Recent research on the brain confirms this
- The new curriculum is based on this approach

Outline

Session	Content
1	Slides – Piaget • *Activity 1 – Discuss what contributed to a successful lesson* • *Activity 2 – Discuss behaviours that fit with the four stages* Slides - Vygotsky • *Activity 3 – Discuss key differences between Piaget and Vygotsky*
2	Slides – Pavlov • *Activity 4 – Discuss:* *- Can we infer human learning from animal studies?* *- Does this explain how children learn to read?* Slides – Skinner • *Activity 5 – Discuss the implications for teaching* Slides – Ausubel & Montessori • *Activity 6 – Discuss the implications of learning by mistakes*
3	Slides – Goswami • *Activity 7 – Each group should identify at least three points and be prepared to report back.*
4	Slides – Intro to activities • *Activity 8 – Identify theories in syllabus units* • *Activity 9 – Plan lessons from a syllabus unit using the theory*

Background information

Learning and Memory Theories		
Type	**Who**	**Main ideas**
Constructivist	Piaget	Human beings try to make sense of the world. They do not just react unthinkingly to stimuli, but always try to construct meaning from their experiences. Children go through four stages in their development of learning (cognitive development): *Sensory-motor, Pre- Operational, Concrete Operational, Formal)*.
Social Constructivist	Vygotsky	Human beings construct meaning in a social setting by talking and interacting with others. They learn from other people who are older or more experienced *("more experienced others")*. They need to have sufficient prior knowledge to acquire new learning. He called this the *"zone of proximal development" (ZPD)*. This is very different from Piaget's fixed stages.
	Montessori	Early childhood is important. Children learn through play. They need independence and to be allowed to make mistakes.
Behaviourist	Pavlov	**Classical Conditioning:** A stimulus leads to a response. Some responses can be conditioned. Learning is linear, with one thing being learned after another.
	Skinner	**Operant Conditioning:** A stimulus needs reinforcement (some sort of reward) in order to become established. Rewards are effective in stimulating learning. Punishments are ineffective and hinder learning.
Social Constructivist	Ausubel	Showed that Skinner's rat actually had a 'mind map' or "schema' of the maze.
Recent brain research	Goswami	Learning happens when physical changes take place in the brain. The brain processes the information that it receives. Learning is not linear but networked.

Constructivism

Jean Piaget

- Human beings try to make sense of the world
- They construct meaning from their experiences
- These meanings form schemas in their minds (mind maps, or understandings of how things fit together)
- They do this by assimilating new information into their schemas, and, where necessary, accommodating (altering) their schemas to fit new information
- Children go through four stages in their development of learning (cognitive development):
  - *Sensory-motor*
  - *Pre-operational*
  - *Concrete Operational*
  - *Formal*

Piaget is one of the most influential cognitive theorists. He pointed out that people construct knowledge (or meaning), rather than receive it. This changed the way in which people saw the learning process. It now underpins education across the world.

He said that the construction of meaning is based on a person's experiences, which in turn are influenced by their emotional and mental stage of development. By "experiences" he means anything a person sees, hears, reads etc.

He pointed out that young children learn best by doing things rather than by sitting and listening. They should be allowed to learn from their mistakes because this is how they 'construct meaning'. A teacher's focus should be on the process of learning, and not just the outcome.

His four stages of cognitive development are:

Typical Age Range	Description of Stage	Developmental Phenomena
Birth to nearly 2 years	*Sensorimotor* Experiencing the world through senses and actions (looking, touching, mouthing)	•Object permanence •Stranger anxiety
About 2 to 6 years	*Preoperational* Representing things with words and images but lacking logical reasoning	•Pretend play •Egocentrism •Language development
About 7 to 11 years	*Concrete operational* Thinking logically about concrete events; grasping concrete analogies and performing arithmetical operations	•Conservation •Mathematical transformations
About 12 through adulthood	*Formal operational* Abstract reasoning	•Abstract logic •Potential for moral reasoning

People no longer believe that the stages are fixed, but the general idea that younger children learn differently from adults is not questioned. Up to the age of about eleven years old, children cannot learn well by sitting still and listening. They need to have actual objects to touch and manipulate in order to understand the ideas behind them.

For example, if you tell a young child that “a triangle has three sides”, he or she will not be able to envisage what a triangle looks like from these words. The child needs to see a picture of a triangle, or better still, to have a physical triangle to touch or hold.

Adaptation	What it says: adapting to the world through assimilation and accommodation.
Assimilation	The process by which a person takes material into their mind from the environment, which may mean changing the evidence of their senses to make it fit.
Accommodation	The difference made to one's mind or concepts by the process of assimilation. Note that assimilation and accommodation go together: you can't have one without the other.
Classification	The ability to group objects together on the basis of common features.
Class Inclusion	The understanding, more advanced than simple classification, that some classes or sets of objects are also sub-sets of a larger class. (E.g. there is a class of objects called dogs. There is also a class called animals. But all dogs are also animals, so the class of animals includes that of dogs).
Conservation	The realisation that objects or sets of objects stay the same even when they are changed about or made to look different.
Decentration	The ability to move away from one system of classification to another one as appropriate.
Egocentrism	The belief that you are the centre of the universe and everything revolves around you: the corresponding inability to see the world as someone else does and adapt to it. Not moral "selfishness", just an early stage of psychological development.
Operation	The process of working something out in your head. Young children (in the sensorimotor and pre-operational stages) have to act, and try things out in the real world, to work things out (like count on fingers): older children and adults can do more in their heads.
Schema (or scheme)	The representation in the mind of a set of perceptions, ideas, and/or actions, which go together.
Stage	A period in a child's development in which he or she is capable of understanding some things but not others.

Social Constructivism

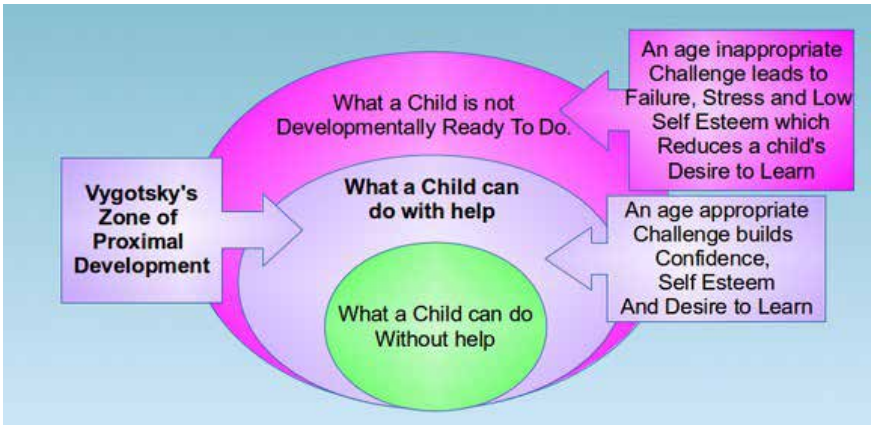
Lev Vygotsky

- **Similar to Piaget about:**
  - Construction of meaning
  - Schemas, assimilation, and accommodation
  - Learning through doing
- **Differs from Piaget because:**
  - Meaning is constructed in a social setting where the role of language is essential
  - The stages of cognitive development are not set
  - Early childhood experiences essential to later learning
  - People's schemas need to be close to a new one for new understanding to be developed (Zone of Proximal Development - ZPD)

Vygotsky was born in the same year as Piaget, but they never met. They shared a constructivist view of cognitive development, but Vygotsky stressed the importance to learning of language and a social setting: "learning is fundamentally a social process and not solely in the learner's head". He identified the importance of learners talking about their learning and discussing new ideas. This helps them form their new understandings or "schemas.

He saw cognitive development as a continuous progression rather than Piaget's fixed stages of development. He believed that learning drives the stages rather than vice versa. Early experiences as babies and very young children lay the basis of future learning. The key period for development and education is from birth to the age of seven.

To acquire new understandings (or schemas), a learner's present understanding must already be close. There is a point at which children can understand and do things by themselves, and then a point where they can understand or do something only if someone helps. This is the "zone of proximal development" (ZPD) – and is where teaching and learning takes place. Beyond the ZPD are things that a learner is not ready to understand or do, even with help.



Maria Montessori

- Early childhood is the most important stage of learning
- Children learn through play
- They need some independence in their learning
- They learn through talking about what they are doing
- They learn though mistakes
- Their learning environment is very important
- They have “absorbent minds” and learn even when we think they are not doing so

Montessori’s emphasis on the importance of childhood, play and independence has been very influential on education. Her thinking is within the social constructivist approach because she sees the importance of learning from experience and also of the learner talking about their experience.

Learning through mistakes goes with independence. It means that mistakes or errors should not be punished but seen as opportunities for learning. It often shows that they are learning in their “Zone of Proximal Development”!

Behaviourism

Ivan Pavlov

- A stimulus generates a response
- A conditioned response occurs when an unrelated stimulus becomes associated with a response
- This is called classical conditioning
- Some people mistakenly see this as the explanation of how we learn to read

When most animals (including humans) eat something, they produce saliva in their mouths to help swallowing and digestion. Pavlov noticed that dogs start to produce saliva before they start to eat because they have learned that the sight or smell of food means that they are going to eat. He therefore performed an experiment.

He showed food to a dog and noticed that it salivated. He rang a bell next to the dog and noticed that the dog did not salivate. Then, every time he fed the dog, he rang the bell first, and then showed it the food. After a few times, the dog started to salivate when it heard the bell (before it saw the food).

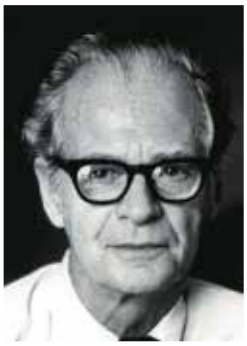
So, Pavlov concluded that the dog had learned to associate the bell with being fed. He called this type of learning **conditioning**, and the response is a **conditioned response**.

Implications of Pavlov

Some people believe this explains how human beings learn to read. When a child first sees a written word (a stimulus) they make no response. If someone says the word to them every time they see it, then they are conditioned to associate the written word with the sound. Few people still believe this is the right explanation and we shall see why later.

The major implication of Pavlov and conditioning is associated with **phobias** (unreasonable fears). For the dog, the bell was a pleasant association, but many people have developed unpleasant associations with other stimuli. These have the same effect as Pavlov's bell in that they trigger a response, but in the case of phobias they are unpleasant. For example, if a child has been hit by a stick, then they might always be frightened of sticks. Pavlov's ideas have given us a way of helping people with a phobia. This is called "cognitive therapy".

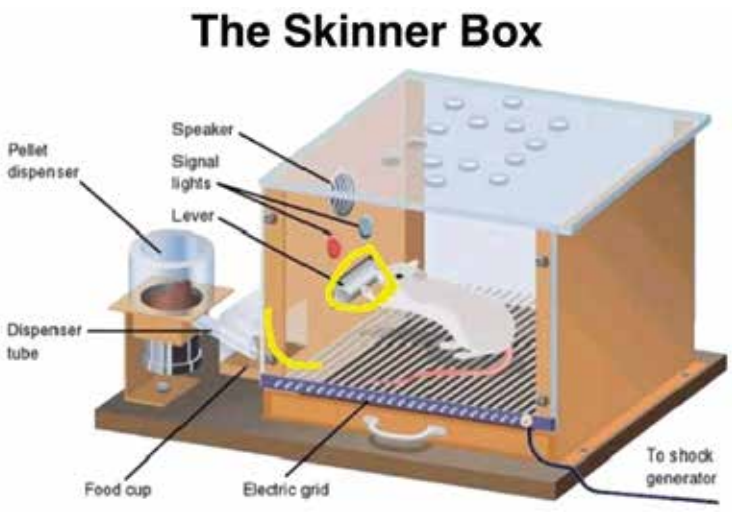
BF Skinner



- A response to a stimulus is reinforced by a reward
- This is called operant conditioning
- Animals can be trained by rewarding a series of separate steps towards the desired behaviour
- Rewards are much more effective than punishments
- Punishment leads to stress and loss of learning

Skinner took Pavlov's ideas a stage further and noted that animals learned to act in a particular way if that learning was reinforced by a reward. If there was no reward, the animal did not learn.

He checked this in a famous experiment in which he put a rat into a specially prepared box. The rat moved around, exploring the box, and when it accidentally touched a lever, some food came into the box. The rat soon learned to press the lever. Skinner called this "operant conditioning". It is different from Pavlov's bell because the rat discovered the lever for itself.



Skinner also experimented with the opposite of a reward. So, instead of giving the rat food when it did something right, he gave it a mild electric shock when it did something wrong. He found that rats learned very little through punishment. In fact, they became stressed and seemed to forget things they had learned already.

Skinner used this reward idea to train rats to remember a route through a maze.

He did this with a simple maze at first, and one step at a time: putting food at the first left turn encouraged the rat to turn left. Putting food at the right turn encourage it to turn right, and so on.

The rat remembered the route even after the food was no longer there.

According to Skinner, the response (turning) had been conditioned by the reward.

Gradually, Skinner taught the rat to find its way through a much more complex maze. Once it had learned the route through a series of 'stimulus and reward' steps, the rat could remember the way through every time. Skinner repeated this experiment with many different rats and with many different mazes. It always worked.

Skinner also tried the experiment the other way round. Instead of rewarding the rat for taking the right turn, he punished it (by giving it a mild electric shock) for taking the wrong route. He found that rats did not learn well through punishment. In fact, they became stressed and confused, and many refused to move at all for fear of the electric shock.

Behaviourism = Learning as a series of small steps

The important thing about Skinner's interpretation of learning is that he saw it as a series of individual steps. So, he recommended that all school learning should be like this. Every piece of learning, however complex, should be broken down into a series of smaller steps (sometimes called "bite-sized pieces").

You may have come across this approach. It is sometimes called "programmed learning". You now know that it comes from Skinner.

The problem is that Skinner's interpretation turned out to be wrong!

Social Constructivism

David Ausubel

Ausubel did not believe that a rat (or even a human being) could remember so many separate turns in order to find its way through a maze. So he thought of a way to prove this.

He made a change to the maze that a rat had learned by blocking a path where the rat had been trained to turn right but giving it an alternative turn.

The rat took the alternative turn and then recognised the proper route and was able to go to the end.

If Skinner was right, and the rat had learned the route through the maze as a series of separate steps, then it could not have completed the maze after the change. So Ausubel concluded that the rat had actually formed a “mind picture” (or schema) of the maze.

Ausbel’s experiments confirmed the interpretations of Piaget and Vygotsky that human beings (and even rats) form “mind maps’ or “schemas’, which are the ways in which we construct meaning from our experiences.

He showed that teaching programmes based on a number of separate steps are not the best way of teaching or learning. The human mind tries to make sense of the steps anyway and sees them as a whole.

Recent research on the human brain confirms this.

Social Constructivism and Recent Brain Research

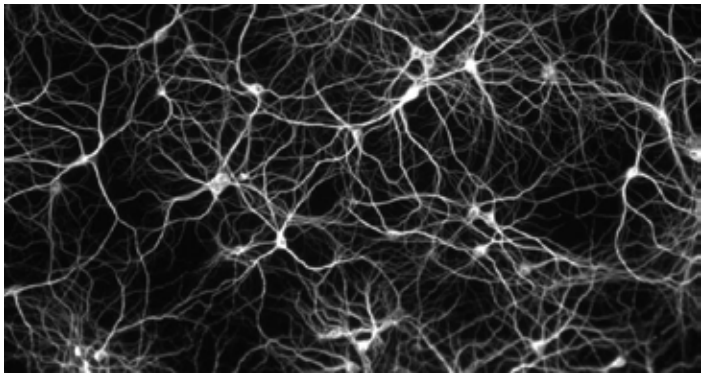
Usha Goswami

- Learning is an actual physical change in the brain
- When we learn something new, fibre connections are formed in our brain. These are called “synapses”
- As we learn more, these synapses join together to form neural networks
- The more we learn, the more complex these networks become
- The more complex the networks become, the more we can understand

Recent neuro-scientific research gives us a different way of understanding learning. We see it now in terms of the development of ‘neural networks’ that become increasingly complex as we learn more and as extra neural connections are made.

Usha Goswami suggests that *“As we learn language and attach labels to concepts, the neural networks become more complex, and as we learn new information via language, fibre connections will form in response that encode more abstract information and therefore more abstract concepts.”*

In short, as we learn more (i.e. have more experiences), so the neural networks become more complex, and when they are more complex, we are enabled to understand more.



This is the neurological or medical explanation of what Piaget and Vygotsky suggested long before it was possible to do such brain research. As Vygotsky said, as we learn more, so our schemas become more complex, and as they become more complex, so we can learn more.

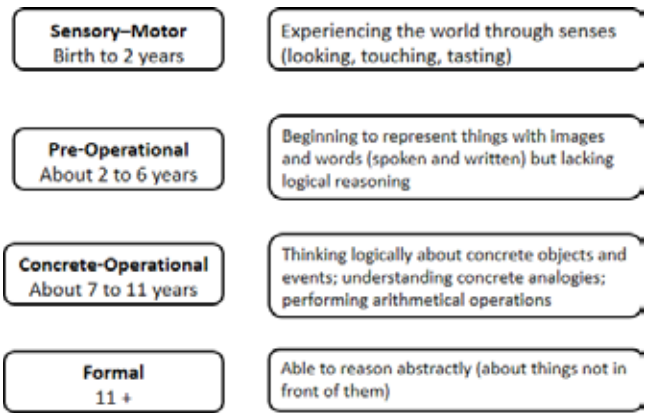
Session 1, Course 1, Module 3

Session	Content
1	Slides – Piaget • *Activity 1 – Discuss behaviours that fit with the four stages* Slides - Vygotsky • *Activity 2 – Discuss key differences*

Session 1 Notes:

Activity 1: Talk about a really successful example of learning from one of your own classes. What made it successful?

Activity 2: Talk about whether Piaget's four stages seem right in the light of your own experience.



Activity 3: List the key similarities and differences between Piaget's and Vygotsky's theories.

Session 2, Course 1, Module 3

Session	Content
2	Slides – Pavlov • *Activity 3 – Discuss if this explains how children learn to read* Slides – Skinner • *Activity 4 – Discuss the implications for teaching* Slides – Ausubel & Montessori • *Activity 5 – Discuss the implications of learning by mistakes*
Session 2 Notes:	
Activity 4 notes: Do you think that we can find out about how human beings learn by observing animals? (Think back to Vygotsky!) Can we infer human learning from animal studies? Do you think this explains how children learn to read?	
Activity 5 notes: What implications for teaching are there from Pavlov and Skinner?	
Activity 6 notes: If children learn from their mistakes, what implications does this have for teaching?	

Session 3, Course 1, Module 3

Session	Content
3	Slides – Goswami • *Activity 6 – Discuss the implications of brain research* • *Activity 7 – Look back at Framework and ECD guidance* • *Activity 8 – Identify key messages from theories*
Session 3 notes:	
Activity 7 notes: What are the key points to be learnt from these theories? Prepare to present 3 ideas.	

Session 4, Course 1, Module 3

Session	Content
4	• *Activity 9 –Identify theories in syllabus units* • *Activity 10 – Plan lessons from a unit using the theory*
Session 4 notes:	
Activity 8 notes: Look at one Syllabus Unit. Where can you see evidence of different learning theories being used?	
Activity 9 notes: Take a syllabus unit and plan some lessons.	

Module 4:
Knowledge, Understanding and Skills

This module explores the three main forms of learning:

• Knowledge • Understanding • Skills

The module looks at the implications of these for learning and for teaching.

Course 1: How Children Learn

Module 4: Knowledge, Understanding and Skills

This module explores the three main forms of learning:

- Knowledge
- Understanding
- Skills

The module looks at the implications of these for learning and for teaching.

Key Points:

- The three forms require different approaches to teaching and learning
- Knowledge is the most straightforward to acquire and to assess
- Understanding involves putting knowledge into a context of meaning (a schema) and takes a range of experiences to develop
- Skills are the ability to **do** something, whether mental or physical, and are developed through practice.

Outline

Session	Content
1	Knowledge, understanding and skills as forms of learning • *Activity 1: Identifying k, u, & s in the old syllabuses* • *Activity 2: Identifying k, u, & s in the new syllabuses* • *Activity 3: Tracking k, u, & s from syllabus to textbook*
2	Developing knowledge, understanding and skills through learning experiences • *Activity 4: Identifying in the Pilot materials the learning experiences that develop k, u, & s* • *Activity 5: Identifying progression of these experiences in the Pilot materials*
3	Developing knowledge, understanding and skills in the textbooks • *Activity 6: Identifying in the textbooks the learning experiences that develop k, u, & s* • *Activity 7: Developing learning experiences to promote k, u, & s in ECD*
4	Developing knowledge, understanding and skills in the classroom • *Activity 8: Developing a range of activities to promote the same k, u, & s*

Resources

3 pages of old syllabus
Sample of new syllabus units
Textbooks and Teacher Guides to go with the sample units
ECD Curriculum and Guidance
Curriculum Pilot materials

Background information

If you look at any subject syllabus, you will see that the learning prescribed tends to fall into three categories:

- knowledge
- understanding
- skills

These are the three main 'building blocks' of a syllabus, and so of a curriculum.

The three terms denote different forms of learning:

Knowledge	refers to the possession of information
Understanding	Putting knowledge into a context of meaning. A single piece of understanding is a 'concept'. When these are fitted into the comprehension general principles that form a structure of meaning, then it becomes a "schema".
Skill	refers to the ability to perform an operation (either mental or physical). It is basically the ability to do **something**.

Example 1

The difference between these can be seen in the example of a child learning about capital cities.

- The ability to recall, for example, that Kampala is the capital city of Uganda is a piece of **knowledge**.
- Explaining why one city rather than another is the capital *(Why is Abuja the capital of Nigeria when Lagos is much bigger? or Why does South Africa seem to have three capitals?)* involves **understanding** the concept of capitals.
- The ability to find out what a country's capital city is, if you did not already know *(What is the capital of Mongolia?)*, would involve a **skill** such as using an atlas or the Internet.

Knowledge	What is the capital city of Uganda?
Understanding	Why is Lagos not the capital of Nigeria?
Skill	Find out what the capital of Mongolia is

Knowledge is reasonably straightforward to acquire and to assess and involves the retention of information. There is a further dimension to learning: the extent of a learner's knowledge about capitals. There is extent in terms of range *(e.g. How many capitals do they know?)* and there is extent in terms of depth *(e.g. How well do they know this range? Do they just know the names, or could they recognise the city from a photograph?)*

The teacher can find out if knowledge has been acquired by asking a simple question *(e.g. What is the capital city of Uganda?)*

Understanding is less straightforward both to acquire and to assess. It is not separate from knowledge, and it usually requires the acquisition of a range of knowledge before the structure of meaning (or schema) becomes apparent. For example, one piece of understanding (or "concept") in biology is that plants growing under the shade of trees tend to be taller than plants growing in the open. To understand why this is the case, a learner needs a range of knowledge about how plants grow and what they need to thrive. Only then can one understand why plants in the shade grow taller.

Finding out whether or not a learner has fully understood something is usually done by asking the learner to explain the concept. So the question might be straightforward *(Why are plants growing in the shade taller than those in the open?)* but the learner's response will be more complex, and

two learners with equal understanding might not give the answer in exactly the same words. Hence, assessment is less straightforward. More of this in the assessment section!

Skills, whether they are mental or physical, are about being able to **do** something (the technical term is *"able to perform an operation"*). Skills are acquired over time through practice.

It is important to note that the distinction between knowledge, skills and understanding is key to curriculum design because they each involve a different type of learning that teachers need to take account of in their teaching and in their design of the curriculum.

Example 2

Another example comes from Physics. An example of knowledge in Physics is that "metals expand when heated". But knowing that metals expand when heated is not the same as understanding why they do so. The skill associated with this is the ability to calculate how much a particular metal will expand if heated by a set amount.

- The ability to recall the fact that metals expand when heated is **knowledge**.
- Understanding why metals expand when heated involves knowledge about the nature of heat, atomic structure, and the effect of vibrations of atoms on physical structures. It is putting all these elements together in a framework of meaning that gives understanding. (For any non-scientist wondering what atoms have to do with this - heat is produced by the vibration of atoms. In metals, as atoms vibrate more, they move farther apart, and so the metal expands.)
- The skill is being able to use the coefficient of linear expansion to calculate by how much a particular metal would expand by any rise in temperature. This is not knowledge because no-one can remember how much every metal will expand for every possible temperature rise. The only way is to perform a calculation – which is a skill.

Knowledge	What happens to metals when they are heated?
Understanding	Why do metals expand when heated?
Skill	How much would copper expand if heated by 5 degrees Centigrade?

There has been much recent debate about the importance of knowledge within the curriculum, and this arises because the term 'knowledge' is used in a variety of ways in education: from 'knowing that' (simple information to be recalled) to 'knowing how to' (which implies skills) and 'knowing about' (which implies understanding). In this book, we shall use the term in its purest sense of "information to be recalled".

Implication for syllabuses

When we look at syllabuses, we find that there are certain key words that denote the sorts of learning being prescribed. These are usually the **verb** that introduces the desired learning:

Knowledge	know that, identify, state, name
Understanding	explain, recognise why
Skill	investigate, carry out, explore, construct, calculate

Here is an example from a unit on 'urbanisation' from Standard 8 Social Studies of the Kenyan Primary School Curriculum. Can you work out which objectives involve knowledge, understanding or skills?

Specific Objectives By the end of this topic, a learner should be able to:

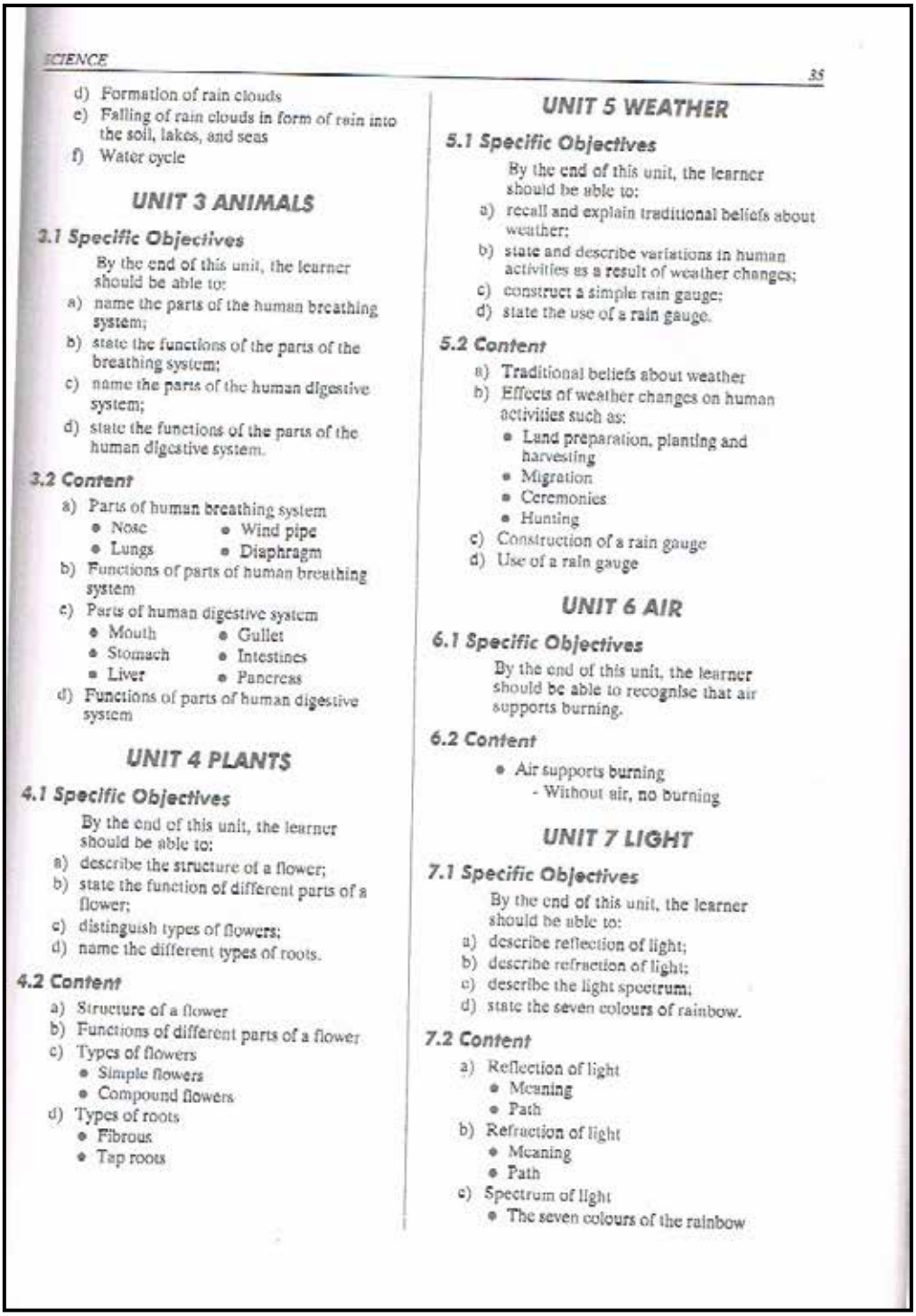
a) explain factors influencing growth of towns
b) identify the functions of the major towns in Kenya
c) identify problems facing urban centres
d) appreciate the attempts being made to solve the problems in urban centres

Yes, the key is in the verb introducing the "specific objective" (in other countries these might be called "learning objectives" or "learning outcomes"). So:

a) "explain" suggests understanding
b) "identify" refers to already-held knowledge (you cannot identify someone if you do not know them!)
c) "identify" again. It sounds as if learners will be told what the problems are and expected to name them – so it is knowledge. This is very different from understanding what the problems are and being asked to explain them.
d) "appreciate" suggests understanding. (But it could also indicate an attitude – more of which later.)

Activity 1

Old Syllabus Example



SCIENCE 35

d) Formation of rain clouds
e) Falling of rain clouds in form of rain into the soil, lakes, and seas
f) Water cycle

UNIT 3 ANIMALS

3.1 Specific Objectives

By the end of this unit, the learner should be able to:

a) name the parts of the human breathing system;
b) state the functions of the parts of the breathing system;
c) name the parts of the human digestive system;
d) state the functions of the parts of the human digestive system.

3.2 Content

a) Parts of human breathing system
- Nose
- Wind pipe
- Lungs
- Diaphragm

b) Functions of parts of human breathing system
c) Parts of human digestive system
- Mouth
- Gullet
- Stomach
- Intestines
- Liver
- Pancreas

d) Functions of parts of human digestive system

UNIT 4 PLANTS

4.1 Specific Objectives

By the end of this unit, the learner should be able to:

a) describe the structure of a flower;
b) state the function of different parts of a flower;
c) distinguish types of flowers;
d) name the different types of roots.

4.2 Content

a) Structure of a flower
b) Functions of different parts of a flower
c) Types of flowers
- Simple flowers
- Compound flowers

d) Types of roots
- Fibrous
- Tap roots

UNIT 5 WEATHER

5.1 Specific Objectives

By the end of this unit, the learner should be able to:

a) recall and explain traditional beliefs about weather;
b) state and describe variations in human activities as a result of weather changes;
c) construct a simple rain gauge;
d) state the use of a rain gauge.

5.2 Content

a) Traditional beliefs about weather
b) Effects of weather changes on human activities such as:
- Land preparation, planting and harvesting
- Migration
- Ceremonies
- Hunting

c) Construction of a rain gauge
d) Use of a rain gauge

UNIT 6 AIR

6.1 Specific Objectives

By the end of this unit, the learner should be able to recognise that air supports burning.

6.2 Content

- Air supports burning
  - Without air, no burning

UNIT 7 LIGHT

7.1 Specific Objectives

By the end of this unit, the learner should be able to:

a) describe reflection of light;
b) describe refraction of light;
c) describe the light spectrum;
d) state the seven colours of rainbow.

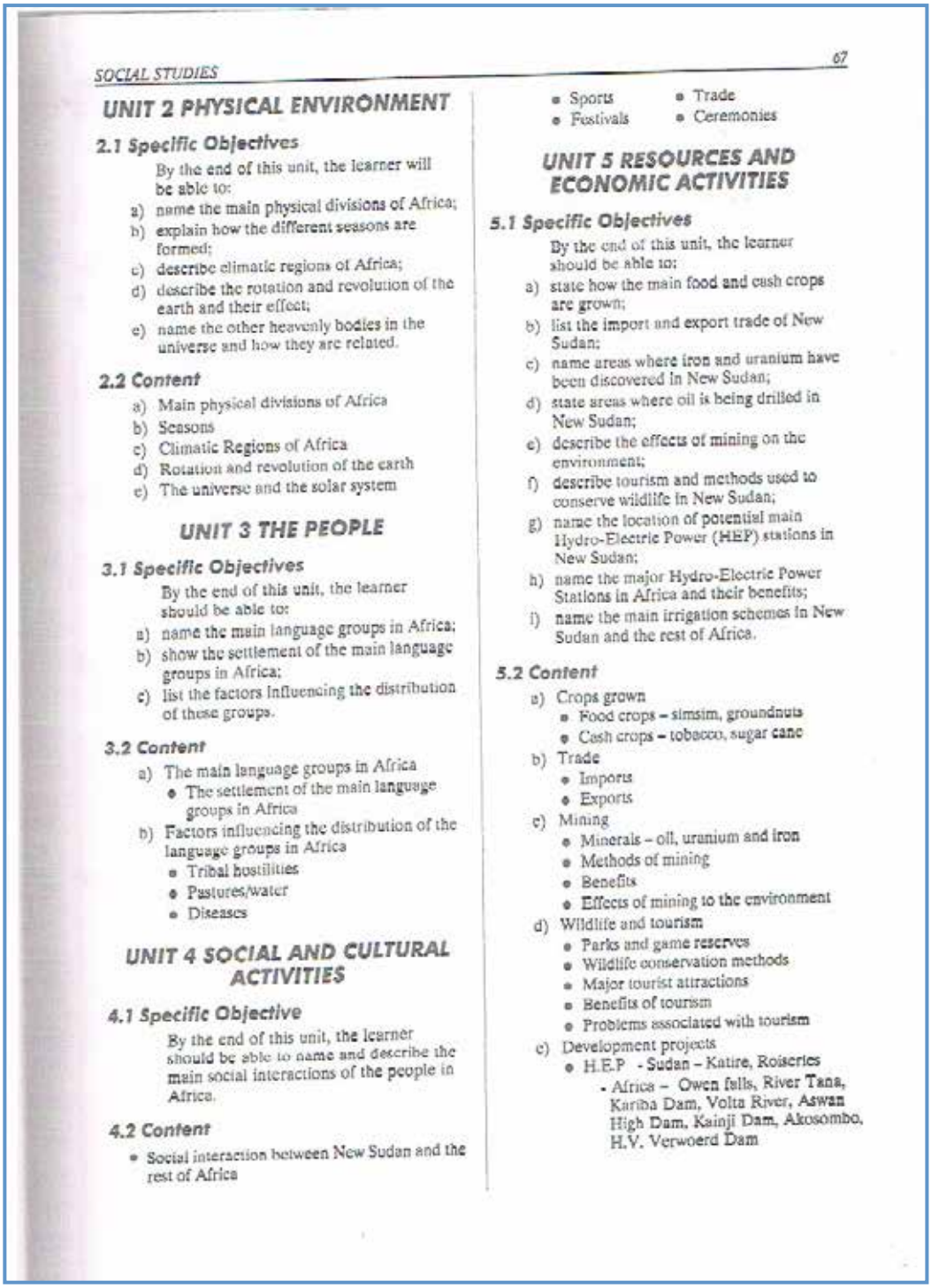
7.2 Content

a) Reflection of light
- Meaning
- Path

b) Refraction of light
- Meaning
- Path

c) Spectrum of light
- The seven colours of the rainbow

Old Syllabus Example



UNIT 2 PHYSICAL ENVIRONMENT

2.1 Specific Objectives

By the end of this unit, the learner will be able to:

a) name the main physical divisions of Africa;
b) explain how the different seasons are formed;
c) describe climatic regions of Africa;
d) describe the rotation and revolution of the earth and their effect;
e) name the other heavenly bodies in the universe and how they are related.

2.2 Content

a) Main physical divisions of Africa
b) Seasons
c) Climatic Regions of Africa
d) Rotation and revolution of the earth
e) The universe and the solar system

UNIT 3 THE PEOPLE

3.1 Specific Objectives

By the end of this unit, the learner should be able to:

a) name the main language groups in Africa;
b) show the settlement of the main language groups in Africa;
c) list the factors influencing the distribution of these groups.

3.2 Content

a) The main language groups in Africa
   - The settlement of the main language groups in Africa
b) Factors influencing the distribution of the language groups in Africa
   - Tribal hostilities
   - Pastures/water
   - Diseases
   - Sports
   - Festivals
   - Trade
   - Ceremonies

UNIT 4 SOCIAL AND CULTURAL ACTIVITIES

4.1 Specific Objective

By the end of this unit, the learner should be able to name and describe the main social interactions of the people in Africa.

4.2 Content

- Social interaction between New Sudan and the rest of Africa

UNIT 5 RESOURCES AND ECONOMIC ACTIVITIES

5.1 Specific Objectives

By the end of this unit, the learner should be able to:

a) state how the main food and cash crops are grown;
b) list the import and export trade of New Sudan;
c) name areas where iron and uranium have been discovered in New Sudan;
d) state areas where oil is being drilled in New Sudan;
e) describe the effects of mining on the environment;
f) describe tourism and methods used to conserve wildlife in New Sudan;
g) name the location of potential main Hydro-Electric Power (HEP) stations in New Sudan;
h) name the major Hydro-Electric Power Stations in Africa and their benefits;
i) name the main irrigation schemes in New Sudan and the rest of Africa.

5.2 Content

a) Crops grown
   - Food crops – simsim, groundnuts
   - Cash crops – tobacco, sugar cane
b) Trade
   - Imports
   - Exports
c) Mining
   - Minerals – oil, uranium and iron
   - Methods of mining
   - Benefits
   - Effects of mining to the environment
d) Wildlife and tourism
   - Parks and game reserves
   - Wildlife conservation methods
   - Major tourist attractions
   - Benefits of tourism
   - Problems associated with tourism
e) Development projects
   - H.E.P - Sudan – Katire, Roiseries
     - Africa – Owen falls, River Tana, Kariba Dam, Volta River, Aswan High Dam, Kainji Dam, Akosombo, H.V. Verwoerd Dam

Activity 3

Example of a Full Syllabus Unit

Social Studies Primary 6	Unit 1: The Challenge of Change
Learn about	**Key inquiry questions**
Learners should investigate and describe what changes have taken place in their country within their lifetime and before it. They should develop an understanding of what has led to conflicts and how that has been resolved by exploring a range of resources available to them, including maps, stories, articles and artifacts. As learners find out about the journey to the independence for South Sudan and South Africa, for example, they should work together to produce a timeline that describes what has taken place, choosing references and illustrations that best describe significant turning points, including those people who led these changes. Learners should compare change in South Sudan to that of significant changes and struggles in other countries such as India, South America, or South Africa. They should evaluate the effects and importance of promoting a tolerance, respect, and equality as key features of successfully implementing change. They should explore processes that lead to democracy and investigate how people can participate in decision making in this way.	• How is equality demonstrated and reflected in different communities in South Sudan? • How is South Sudan similar and different to neighbouring countries? • What led to the most successful strategies for conflict resolution? • What effects do decisions that are made democratically have on a community and beyond? • Where in our own community can we see evidence of conflict resolutions?

Learning outcomes		
Knowledge and understanding	**Skills**	**Attitudes**
• Explore and list the stages that led to the independence of South Sudan • Describe the barriers to change in South Sudan and who the significant people were in promoting peace and democracy • Know about the importance and effect of equality, tolerance and respect for one another • Explain the ways in which people can participate in democracy and provide examples of this from the recent history in South Sudan and other parts of the world	• Investigate the reasons why South Sudan struggled to gain independence • Relate and compare changes and processes that led to conflict resolution • Explore and interpret evidence of change in South Sudan and other countries	• Appreciate the value of democracy to informing decision making • Respect the rights of all people to share and express views and opinions • Value the role that historical sources have in shaping how we live today
Contribution to the competencies: Critical thinking: Using a range of resources to explore what changes have taken place in South Sudan and elsewhere Communication: Read and comprehend critically reports and articles about changes and political and economic policy in South Sudan Co-operation: Be respectful of others' views when discussing equality and democracy Culture and heritage: Show concern for equality and democracy		
Links to other subjects: Peace education: Peace and conflict resolution in South Sudan		

Session 1, Course 1, Module 4

Session	Module 4 Forms of Learning
1	Knowledge, understanding and skills as forms of learning • *Activity 1: Identifying k, u & s in the old syllabuses* • *Activity 2: Identifying k, u & s in the new syllabuses* • *Activity 3: Tracking k, u & s from syllabus to textbook*
Session 1 Notes:	
Activity 1: Identifying k, u & s in the old syllabuses	
Activity 2: Identifying k, u & s in the new syllabuses	
Activity 3: Tracking k, u & s from syllabus to textbook	

Session 2, Course 1, Module 4

Session	Content
2	Developing knowledge, understanding and skills through learning experiences • *Activity 4: Identifying in the Pilot materials the learning experiences that develop k, u & s* • *Activity 5: Identifying progression of these experiences in textbooks*
Session 2 Notes:	
Activity 4: Identifying in the Pilot materials the learning experiences that develop k, u & s	
Activity 5: Identifying progression of these experiences in textbooks	

Session 3, Course 1, Module 4

Session	Content
3	Developing knowledge, understanding and skills in the textbooks • *Activity 6: Identifying in the textbooks the learning experiences that develop k, u & s* • *Activity 7: Developing learning experiences to promote k, u & s in ECD*
Session 3 Notes:	
Activity 6: Identifying in the textbooks the learning experiences that develop k, u & s	
Activity 7: Developing learning experiences to promote k, u & s in ECD	

Session 4, Course 1, Module 4

Session	Content
4	Developing knowledge, understanding and skills in the classroom • *Activity 8: Developing a range of activities to promote the same k, u & s*
Session 4 Notes:	
Activity 8: Developing a range of activities to promote the same knowledge, understanding and skills.	

Module 5:
Higher-Order Thinking Skills (HOTS)

This module explores the concept of critical thinking and problem solving, the thought processes that are involved and how these can be encouraged and developed.

Course 1: How Children Learn

Module 5: Higher-Order Thinking Skills (HOTS)

This module explores the concept of critical thinking and problem solving, the thought processes that are involved and how these can be encouraged and developed.

Key Points:

- Bloom and Webb set out ways of understanding Higher-Order Thinking Skills
- Thinking and problem solving are key parts of the SS curriculum
- These are important to the learning process within subjects
- Opportunities for critical thinking and problem solving need to be identified in the syllabuses
- Learning activities that promote critical thinking and problem solving need to be planned

Outline

Session	Content
1	Bloom's Taxonomy and its hierarchy of learning • *Activity 1: Identifying Bloom's hierarchy in the old syllabuses* • *Activity 2: Identifying Bloom's hierarchy in the new syllabuses*
2	Webb's Depth of Knowledge analysis • *Activity 3: Identifying Webb's DOK in the old syllabuses* • *Activity 4: Changing a learning outcome to reflect Webb's DOK* • *Activity 5: Identifying Webb's DOK in the new syllabuses*
3	Critical and creative thinking in the student competencies • *Activity 6: Line up the competency with Bloom* • *Activity 7: Line up the competency with Webb* • *Activity 8: Identify HOTS in the new syllabuses*
4	Developing knowledge, understanding and skills in the classroom • *Activity 9: Plan post-course task*

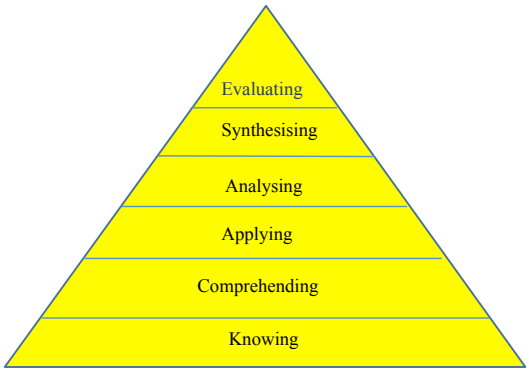
Resources

3 pages of old syllabus
Sample of new syllabus units
Curriculum Pilot materials

Background information

Blooms' Taxonomy

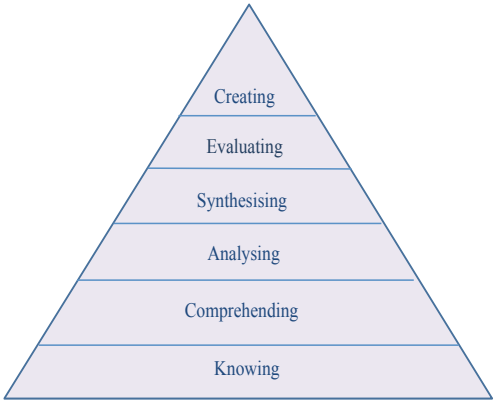
It was over sixty year ago that Benjamin Bloom wrote his "Taxonomy of Learning Objectives" (Bloom 1956) but it is still influential today. The model is always presented as a triangle:



Bloom's original model

The taxonomy suggests that within the cognitive domain, there is a hierarchy of processes with 'knowledge' as the first or lowest level and comprehending (or "understanding") next. The other four are all skills because they refer to mental operations.

One of Bloom's pupils, Lorin Anderson, amended this model in 2001 by adding "creating" and by removing "applying". He thought that analysing, synthesising and evaluating were all forms of applying.



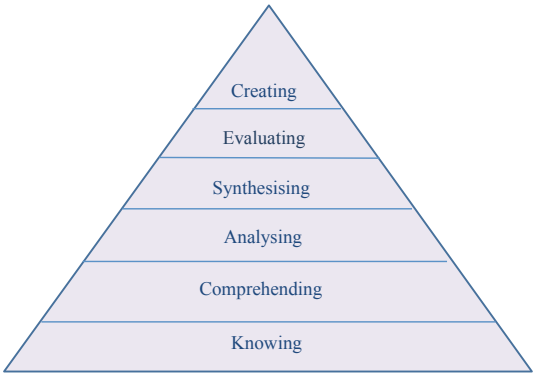
Anderson's amended model

Analysing means to examine something methodically and in detail in order to explain and interpret it. It is almost to take something apart to see what the constituent parts are.

Synthesising is the opposite, meaning to put different things together, usually to make something new – to link different ideas in a new way.

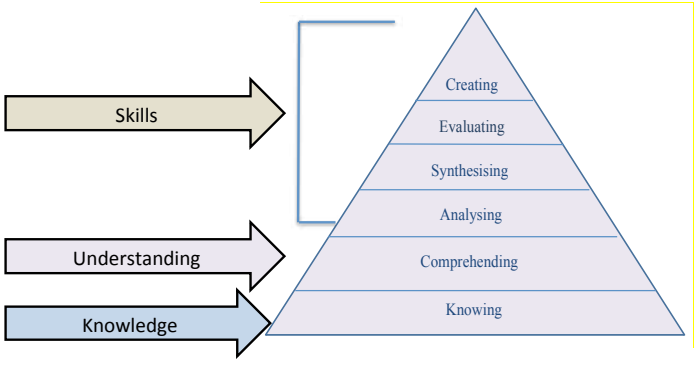
Evaluating is to make a judgement about the worth of something. This can only be done when there is understanding, and the matter has been analysed.

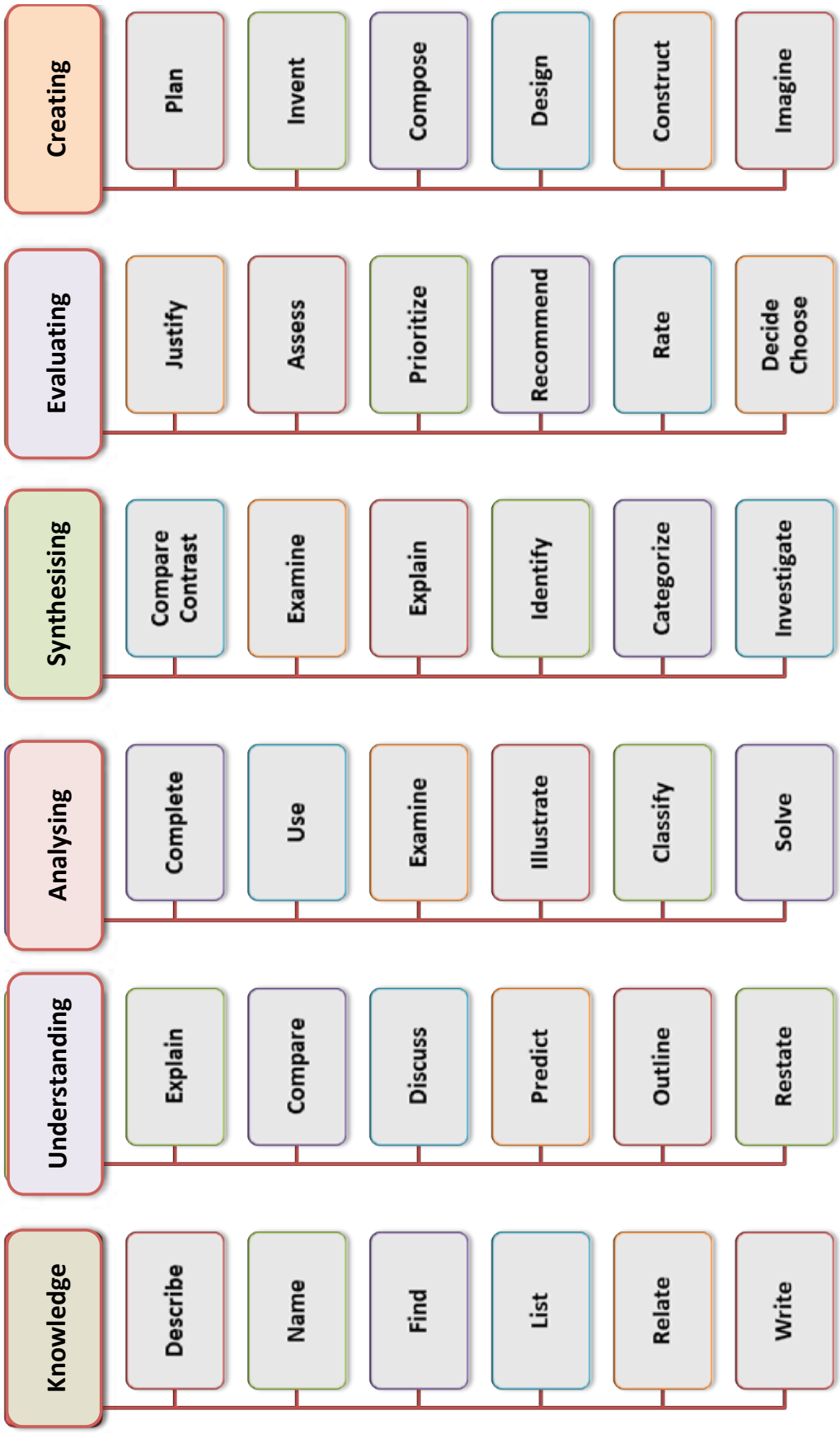
Creating, as it suggests, is the ability to come up with something entirely new: new ideas, new interpretations, new products.



The competency-based model

Application of learning is at the heart of a competency-based curriculum, and so the key implication for curriculum design is how well the curriculum is focused on these higher levels of learning. How can we ensure that learners not only acquire knowledge and develop understanding, but also learn to apply their learning by analysing, synthesising, evaluating, and creating? How do we build that into the curriculum?




Creating
Plan
Invent
Compose
Design
Construct
Imagine
Evaluating
Justify
Assess
Prioritize
Recommend
Rate
Decide
Choose
Synthesising
Compare
Contrast
Examine
Explain
Identify
Categorize
Investigate
Analysing
Complete
Use
Examine
Illustrate
Classify
Solve
Understanding
Explain
Compare
Discuss
Predict
Outline
Restate
Knowledge
Describe
Name
Find
List
Relate
Write

Webb's "Depth of Knowledge" Anaylsis (DoK)

A more recent approach was put forward by Prof Norman Webb of Wisconsin University in 1997. This saw four levels of 'Depth of Knowledge' (DOK).

Knowledge is used here in a wider sense that encompasses understanding and the ability to process and apply that knowledge. "Knowing how to ..." and "Knowing about ..." as well as "knowing that ...".

Webb's DOK has become the basis of the entrance exams for universities in the USA – as well as for a wide range of assessment of deeper understanding and application in other countries, including South Sudan and Uganda.

Webb's Depth of Knowledge Analysis (DoK)	
Level 1	**Recall and reproduction** Recall of a fact, information, or procedure
Level 2	**Application of skills and concepts** Use of information or conceptual knowledge – two or more steps
Level 3	**Strategic thinking** Requires reasoning, developing a plan or a sequence of steps, some complexity, more than one possible answer
Level 4	**Extended thinking** Requires an investigation, time to think and process multiple conditions of the problem.

Webb's analysis is used in assessment, but it also informs curriculum design.

Dr Karin Hess (2009) has helpfully combined Bloom's Taxonomy and Webb's Depth of Knowledge into a single chart which she calls a 'Cognitive Rigor Matrix'. The matrix allows teachers to examine the depth of understanding required for different tasks that might at first glance seem to be at comparable levels of complexity. More information is available at: www.karin-hess.com/cognitive-rigor-and-dok

Approaches such as these help us to plan learning in terms of greater depth, and also to find out how well our students are doing in these terms. It does not matter which one you use, or whether you find some blend that suits you best. What is important is to think about how the intellectual level is being increased, and these approaches all give us a way of looking at learning in terms of its increasing depth or complexity. The brain is an extraordinarily complex organ, and no simple taxonomy of levels will really describe what's going on when we learn something. There are, of course, many theories about how human beings learn, and although it is not the function of this book to examine them all in detail, we need to see how the major ones relate to curriculum design.

Theories of Learning

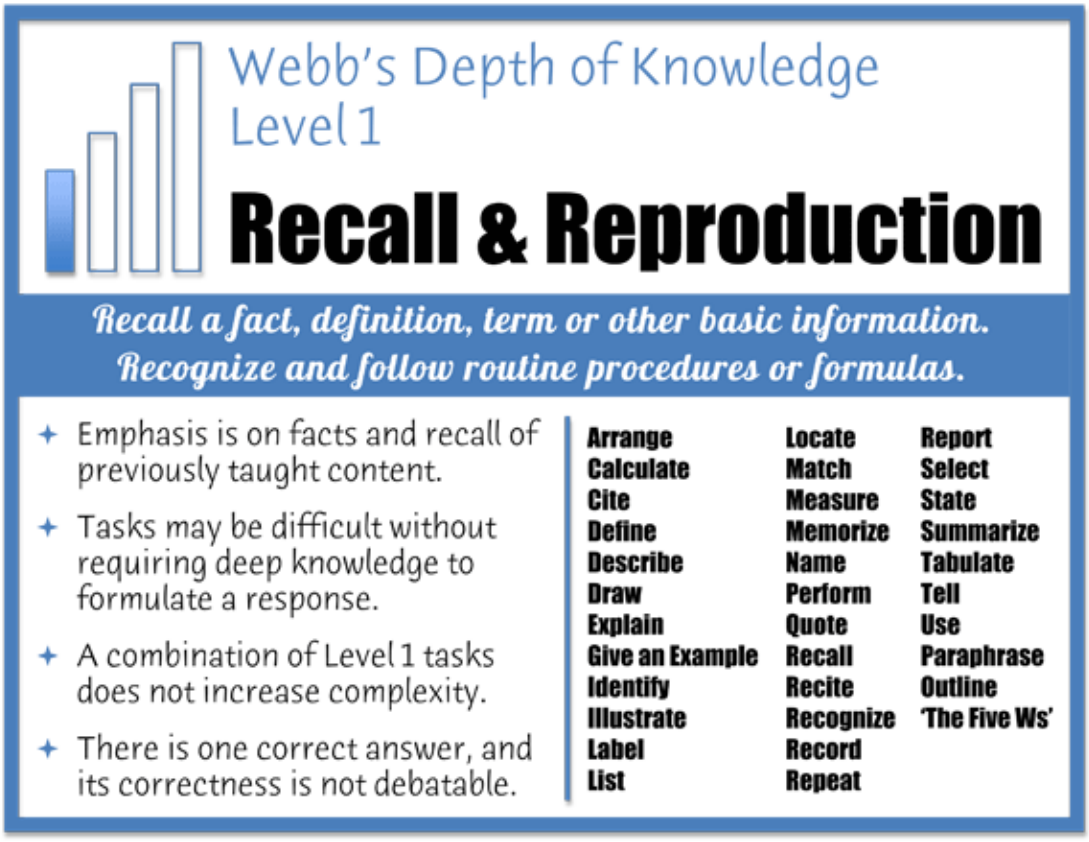
An important element of all three of the above approaches is the development of deeper understanding. This is the difference between Levels 1 and 2 of Bloom and referred to by Webb as *"conceptual knowledge"*. In each case, it refers to the stage at which a learner is able to put acquired knowledge into a framework of meaning.

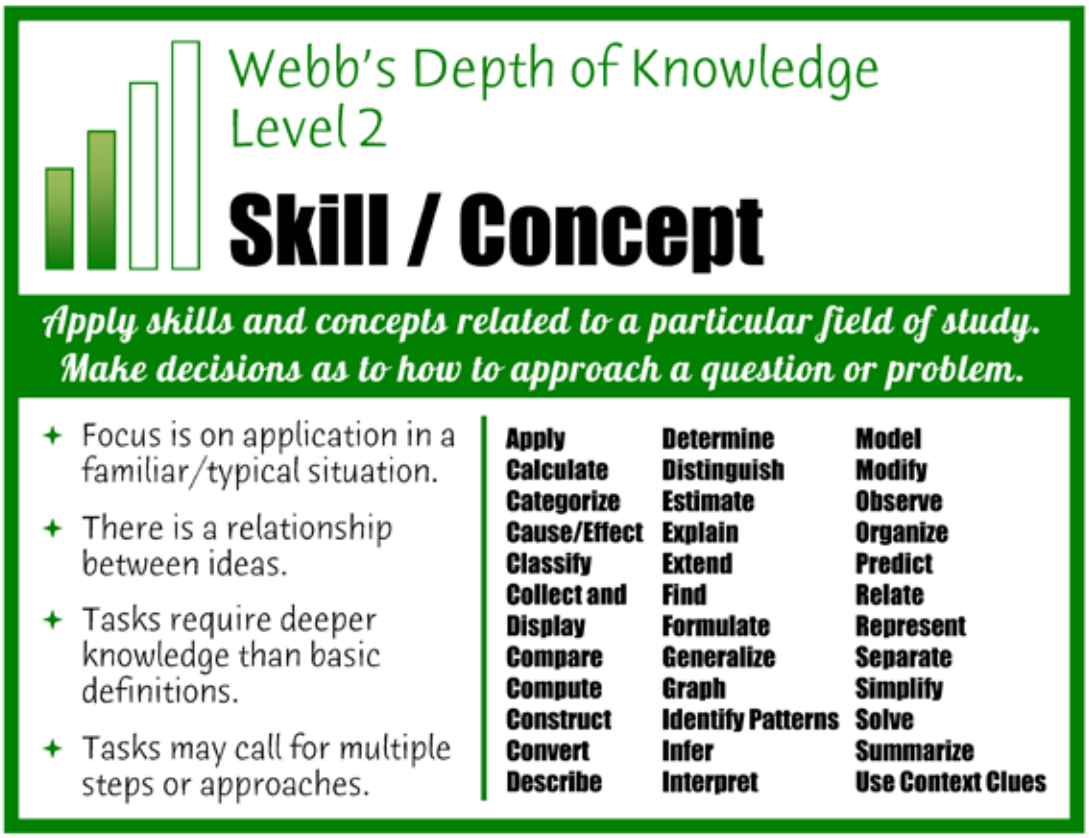
Those who take a 'constructivist' view (such as Piaget and Vygotsky) see the process of learning as one of 'constructing meaning'. In this theory, when we learn something new, we need to fit this new learning into the meaning we already hold of the world. This 'already-held meaning' or set of understandings is called a 'schema'. Jean Piaget (1969) first used the term to refer to the cognitive structures that enable thinking. The schema represents a series of interconnected pieces of knowledge and understandings that allow us to make sense of our experiences. The schema becomes more extensive as we encounter more experiences. (We should know that the word "schema" is singular, although it may sound plural. More than one schema is technically called "schemata" – see Goffman below - but most people say "schemas"!)

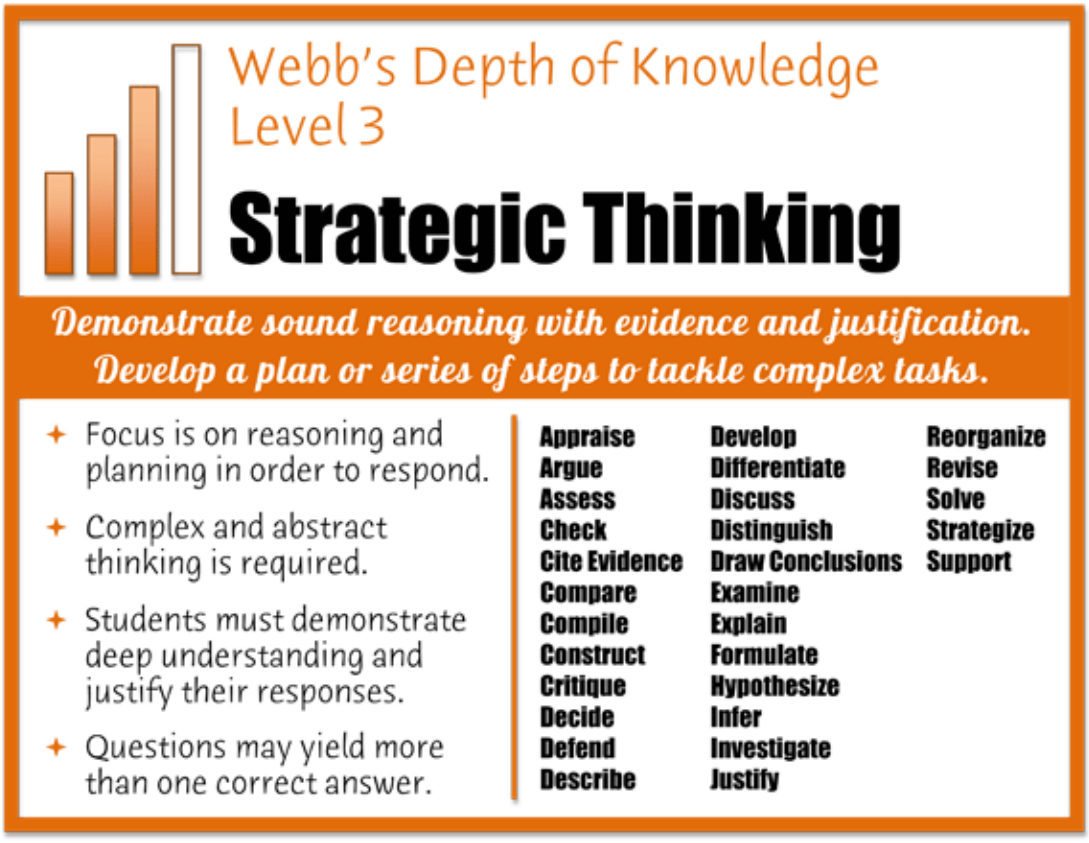
Lev Vygotsky (1978) took this into a social context and saw these meanings as socially constructed, with language (particularly talk) playing a key part in learning. It is through talking to others (particularly "more experienced others" such as teachers, but also with fellow learners) that learners are able to make sense of their experiences. This is the reason why there is emphasis on group and paired discussions. More recent researches, such as Lave and Wenger (1991), emphasise this social dimension: *"learning is fundamentally a social process and not solely in the learner's head"*.

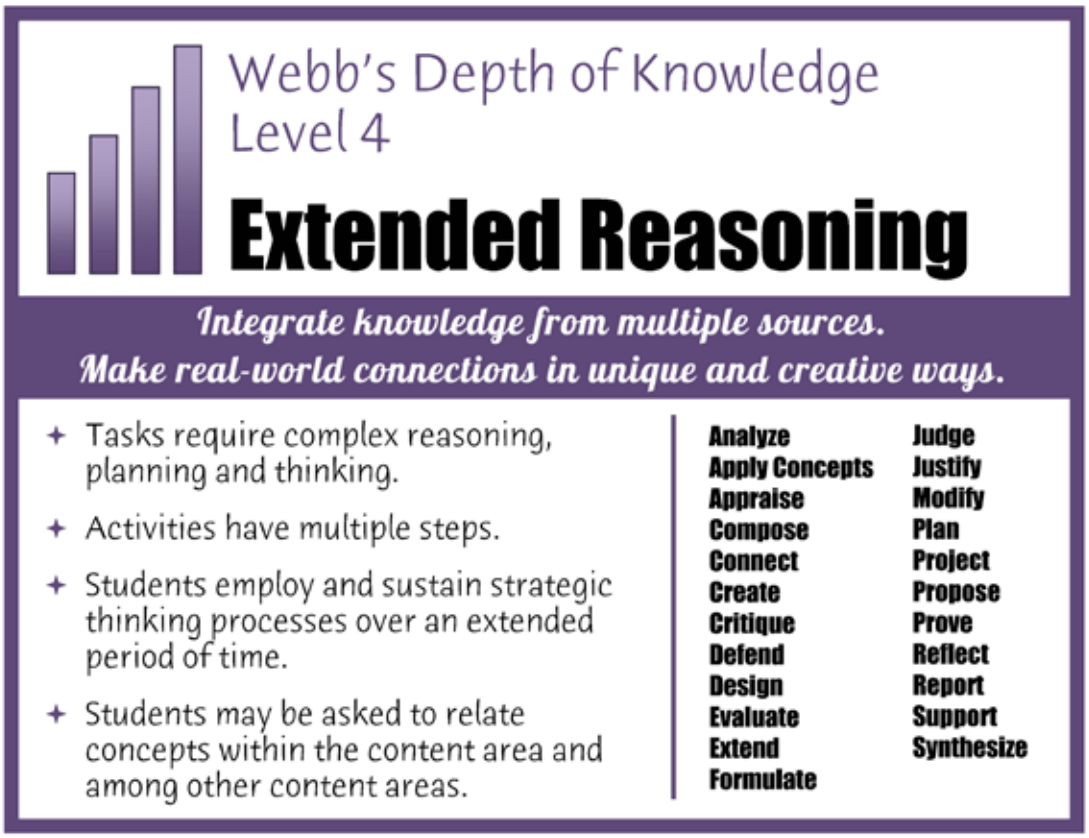
Erving Goffman (1974) developed the idea of 'frames' to refer to *"schemata of interpretation"* which allow individuals or groups *"to locate, perceive, identify, and label events and occurrences, thus rendering meaning, organizing experiences, and guiding actions"*. This term became more prevalent in education to describe the way in which understanding is constructed, but it essentially refers to the same thing: a set of understandings.

Recent neuro-scientific research gives us a different way of understanding learning. We see it now in terms of the development of 'neural networks' that become increasingly complex as we learn more and as extra neural connections are made. Usha Goswami (2008) suggests that *"As we learn language and attach labels to concepts, the neural networks become more complex, and as we learn new information via language, fibre connections will form in response that encode more abstract information and therefore more abstract concepts"*. In short, as we learn more (i.e. have more experiences), so the neural networks become more complex, and when they are more complex, we are enabled to understand more.




Webb's Depth of Knowledge
Level 2
Skill / Concept
Apply skills and concepts related to a particular field of study.
Make decisions as to how to approach a question or problem.
Focus is on application in a familiar/typical situation.
There is a relationship between ideas.
Tasks require deeper knowledge than basic definitions.
Tasks may call for multiple steps or approaches.
Apply
Calculate
Categorize
Cause/Effect
Classify
Collect and Display
Compare
Compute
Construct
Convert
Describe
Determine
Distinguish
Estimate
Explain
Extend
Find
Formulate
Generalize
Graph
Identify Patterns
Infer
Interpret
Model
Modify
Observe
Organize
Predict
Relate
Represent
Separate
Simplify
Solve
Summarize
Use Context Clues


Webb's Depth of Knowledge
Level 3
Strategic Thinking
Demonstrate sound reasoning with evidence and justification.
Develop a plan or series of steps to tackle complex tasks.
Focus is on reasoning and planning in order to respond.
Complex and abstract thinking is required.
Students must demonstrate deep understanding and justify their responses.
Questions may yield more than one correct answer.
Appraise
Argue
Assess
Check
Cite Evidence
Compare
Compile
Construct
Critique
Decide
Defend
Describe
Develop
Differentiate
Discuss
Distinguish
Draw Conclusions
Examine
Explain
Formulate
Hypothesize
Infer
Investigate
Justify
Reorganize
Revise
Solve
Strategize
Support


Webb's Depth of Knowledge
Level 4
Extended Reasoning
Integrate knowledge from multiple sources.
Make real-world connections in unique and creative ways.
Tasks require complex reasoning, planning and thinking.
Activities have multiple steps.
Students employ and sustain strategic thinking processes over an extended period of time.
Students may be asked to relate concepts within the content area and among other content areas.
Analyze
Apply Concepts
Appraise
Compose
Connect
Create
Critique
Defend
Design
Evaluate
Extend
Formulate
Judge
Justify
Modify
Plan
Project
Propose
Prove
Reflect
Report
Support
Synthesize

Social Studies Primary 7	Unit 1: The Rise and Fall of Civilisations

Learn about	Key inquiry questions
Learner should find out about the rise and fall of civilisations over time and identify the areas where it took place using relevant sources like maps, text books and descriptions. They should compare in detail at least two civilisations like the Mayas, Aztecs, Khymer Empire or Romans. Learners should consider what impact these civilisations have on South Sudan and the rest of the world today. Learners should deepen their understanding of the roots of these civilisations by studying maps of where they took place, looking for physical features and communication routes for example to help explain the reason for settlement. Learners should develop an understanding of periods of history by analyzing characteristics of different periods, assessing which factors were key to their successes and failure. They should work together to research the relationships between characteristic features and use this knowledge to take part in informed debates about different periods in history, questioning what can be learnt from events and styles of leadership that could help support sustainable developments in South Sudan today.	• What are the key features of the rise of civilisations? • Why do so many civilisations decline? • What resources provide us with the best information about the past? • What are the most significant outcomes from past civilisations that affect us today? • How does studying maps help us to understand about the development of civilisations? • What changes would you have made to some of the events that have taken place in the past?

Learning outcomes

Knowledge and understanding	Skills	Attitudes
• Describe two civilisations in detail • Explain the factors that contribute to the rise and decline over time of civilisations • Know the features of debate and how to research effectively in order to be able to make a valuable contribution • Develop a sense of period by knowing about the characteristic features of periods studied • Use maps to recognise settlement patterns and communication routes	• Explore the locations of civilisations using maps • Investigate factors that led to the rise and decline of civilisation • Compare characteristic features of civilisations • Outline the benefits the modern world from civilisations from the past	• Value the resources that describe the past to us • Appreciate the changes brought about by civilisation to society today • Respect the challenges faced by today's society with respect to some events that happened in the past

Contribution to the competencies:
Critical thinking: Using a range of resources to find out about the past
Communication: Read and comprehend a variety of text types to find out about civilisations from the past
Co-operation: During debate, be tolerant of the view of others
Culture: Take pride in the way that aspects of past civilisations have shaped society in South Sudan in a positive way

Session 1, Course 1, Module 5

Activity 1

Identifying Bloom’s hierarchy in the old syllabuses

Activity 2

Identifying Bloom’s hierarchy in the new syllabuses

Session 2, Course 1, Module 5

Activity 3

Identifying Webb's DOK in the old syllabuses

Activity 4

Changing a learning outcome to reflect Webb's DOK

Activity 5

Identify the DOK level

Session 3, Course 1, Module 5

Activity 6

Line up the competency with Bloom

Activity 7

Line up the competency with Webb

Activity 8

Identify HOTS in the new syllabuses

Session 4, Course 1, Module 5

Activity 9

Plan post-course task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MINISTRY OF EDUCATION, SCIENCE & TECHNOLOGY
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