YEAR 2

SEMESTER 2

Four-Year B.Ed. Course Manual

Multimedia Development and Use for Early Grade Classrooms

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FOREWORD

These Initial Teacher Education course manuals were developed by a team consisting of members from Colleges of Education and four universities namely the University of Ghana, Kwame Nkrumah University of Science and Technology, University of Education, Winneba, and University for Development Studies. This team was originally constituted by the National Council for Tertiary Education (now the Ghana Tertiary Education Commission) in 2019 to support the delivery of the new B.Ed. curriculum with assistance from T-TEL and UK Aid. The revision, finalization and printing of these manuals took place in 2021 with support from T-TEL and Mastercard Foundation.

The course manuals have been produced for use as general guides for the delivery of the new four-year B.Ed. curriculum in Colleges of Education in collaboration with their affiliated universities. They are designed to support student teachers, tutors, and lecturers in delivering a complete B.Ed. course for training student teachers which meets the requirements of the National Teachers' Standards, enabling them to teach effectively in basic schools.

The first section of the manuals is focused on the course information and vision for the B.Ed. curriculum. The second section presents the course details, goal for the subject or learning area, course description, key contextual factors as well as core and transferable skills and cross-cutting issues, including equity and inclusion. The third section is a list of course learning outcomes and their related learning indicators. The fourth section presents the course content which is broken down into units for each week, the topic and sub-strands and their related teaching and learning activities to achieve the learning outcomes and the teaching and learning strategies. This is followed by course assessment components in section five. Each manual contains a list of required reading and references as well as teaching and learning resources. The final section presents course related professional development for tutors and lecturers to be able to use each section of the manual.

Field instructions to guide Supported Teaching in School are integrated into the course manuals to provide the student teacher with guidance in developing teaching throughout the entire period of study to be able to meet the requirements of the National Teachers' Standards (NTS) and the National Teacher Education Curriculum Framework (NTECF). To ensure maximum benefit the course manuals should be used in addition to other resources such as the NTS, NTCEF, National Teacher Education & Assessment Policy and the National Teacher Education Gender Equality and Social Inclusion (GESI) Strategy and Action Plan.. This will help to ensure that student teachers' learning is integrated within the wider teacher education policy framework.

Professor Mohammed Salifu Director General, Ghana Tertiary Education Commission

ACKNOWLEDGEMENTS

The course manuals were developed through the collaborative efforts of a team of individuals from Colleges of Education, University of Ghana, Kwame Nkrumah University of Science and Technology, University of Education, Winneba, and University for Development Studies. They were produced in association with the Ghana Tertiary Education Commission of the Ministry of Education, Ghana.

A participatory team approach was used to produce this set of resources for tutors/lecturers, mentors, and student teachers. We are grateful to the specialists who contributed their knowledge and expertise.

Special thanks to Professor Jophus Anamuah-Mensah - T-TEL Key Advisor, Dr. Eric Daniel Ananga - T-TEL Key Advisor for Curriculum reform and Beatrice Noble-Rogers who provided key editorial, review and content input and facilitated the process of drafting and finalising the course manual.

Patricia Appiah-Boateng and Gameli Samuel Hahomene, served as typesetting and formatting coordinators and designed and produced the illustrations, tables, and other graphics which appear in the pages. They spent time and effort designing and redesigning the graphic layout and producing the camera-ready copy resulting in a set of materials that are easy to use, read, and reference.

Thanks also goes to all T-Tel staff members who worked to support production of these course manuals, particularly Beryl Opong-Agyei and Gideon Okai. Their frankness and co-operative attitude complimented the team approach used to produce this manual.

We are indebted to the Ministry of Education and the Ghana Tertiary Education Commission (GTEC) for the general support and specific helpful advice provided during production of the course manuals. Recognition and thanks must go to Chief Technical Advisor for T-TEL and Policy Advisor to the National Education Reform Secretariat, Akwasi Addae-Boahene, Prof. Mohammed Salifu, the Director General of GTEC and Mr. Jerry Sarfo the coordinator for the colleges of education, who in diverse ways supported during the course manual writing workshops.

In addition to all the staff who participated visibly in the development of these materials we would like to acknowledge all those people from the many colleges of education and universities in which we have worked who have, directly or indirectly, shared their views on the curriculum with us.

CORE WRITING TEAM

Names of writers	Subject		Names of writers	Subject
Dr. Isaac Eshun			Cletus Ngaaso	Social Studies
Dr. Anthony Baabereyir			Mohammed Adam	
Ms. Shirley Dankwa	African Studies		Dr. Emmanuel Adjei-Boateng	
Prof. S.Y. Annor	Agriculture		Dr. Yaw Nyadu Offei	Special Education
Dr. Salome praise Otami			Prof. Samuel Hayford	
Dr. Samuel Frimpong			Dr. Awuni	
Robert Quansah	Early Grade		Rev.(Dr) Nyueko Avotri	Technical Vocational Education and Training
Dr. Abraham Kwadwo Okrah	English Language		Elizabeth Lani Ashong	
Dr. Sarah Emma Eshun			Michael Tsorgali	
Vivian Acquaye				
Felix A. Odonkor			Frnacis Donkor	
Dr. Cecilia Esinam Agbeh			Dr. Maxwell Nyatsikor	
Ibrahim Osmanu	French		Prof. Salomey Essuman	
Dr. Kofi Adu-Boahen			Dr. Paul Kwadwo Addo	
Dr. M. Kusimi			Dr. Winston Kwame Abroampa	
Dr. Aboagye Dacosta			Mr. Kwaku Esia-Donkoh	
Mr. Alexander Otoo	Geography		Mohammed Z. Abdulmumin	Pedagogy
Dr. Yvonne A.A. Ollennu	Ghanaian Language		Dr. Mohammed Hafiz	Arabic
Kwasi Adomako			Iddris Mohammed	
Dr. Akwasi Kwarteng Amoako-Gyampah			Mohammed Almu Mahaman	
Anitha Oforiwah Adu-Boahen			Murtada M. Muaz	
Gertrude Nkrumah	History		Dr M. Q. Adjahoe	Music
Prof Charles Owu-Ewie	Literacy		Prof Cosmas Mereku	
Dr. Ahmed Amihere			Prof. Reginald Ocansey	Physical Education
Zakaria Sadiq	Mathematics		Dr. Emmanuel Osei Sarpong	
Dr. R. Addai-Mununkum	RME		E. Kwaku Kwaa-Aidoo	ICT

INTRODUCTION TO COURSE MANUALS

Welcome to this B.Ed. Course manual.

Following the accreditation of the B.Ed. by the national accreditation Board with its recognition as a world class teacher education curriculum, the decision was taken to support effective implementation through the development of course manuals. the course manuals provide tutors and lecturers with the materials necessary to support teaching each of the B.Ed. courses. The manuals adhere directly to, and emphasise, the principles and standards set out in the NTS, NTECF and in the B.Ed. and will help ensure operationalising the Government's teacher education reform Policy.

The manuals serve the following purposes:

- they are the key educational agreements between the training institution and the student teachers. In this way student teachers know what the expectations are for them and for the training they will receive.
- they lay out the course outcomes, content, strategies, and assessment, thereby providing direction to and consistency in training and B.Ed. implementation among tutors across the country.
- they are explicit documents that provide other institutions with information on which to base transfer/ articulation decisions.

Specifically, they also:

- support coherent lesson planning and teaching which will enable student teachers to achieve the NTS and become good teachers who ensure all pupils' learning whilst offering tutors the flexibility for adaptation for local needs and contexts.
- Provide a lesson by lesson overview of the course, building on and developing the material in the course specifications.
- Inform tutors, student teachers and others working with student teachers about:
    1. What is to be taught and why.
    2. how it can be taught.
    3. how it should be assessed.
- Provide opportunities for student teachers to develop and apply knowledge during supported teaching in school, creating a strong bond between learning in school and in the training institution.
- Reflect the stage of student teacher development, set out in the model for progress across the four years of the B.Ed.
- Can be used as self-study tools by student teachers.
- Ensure that all information necessary to inform teacher training is in one place (serves as reference document).
- The manuals are the basis of the codes and university professional development sessions to ensure Principals, tutors, lecturers and heads of department are fully familiar with the details of: courses, outcomes, content, approaches, assessments and lessons.

Who are course manuals for:

- College of Education Tutors
- Teacher Education University Lecturers
- Student Teachers
- Mentors and Lead Mentors
- All Those with An Interested In Teacher Education.

USING THIS MANUAL

Writers of the manuals engaged widely with colleagues in each subject area at each stage of development. Besides, writers envisaged themselves in varied contexts as they wrote, to suggest methodologies and strategies for teaching the strands which would ensure student teachers are enabled to achieve the learning outcomes. In view of our commitment to creativity, problem solving, collaboration and to lifelong learning, we expect that individual tutors will "own" their manuals and become user-developers. lessons in the manuals will be strands for weekly Pd meetings where tutors/lecturers will situate the lessons in the contexts of their colleges and their student teachers, to maximize the benefits.

It is also expected that tutors will model the best pedagogic practices for student teachers. Key among such practices is the communication of the importance of having a personal teaching philosophy. We expect that tutors and lecturers will explicitly communicate their personal teaching philosophies to their student teachers during the first meeting of every course. in preparation for this, we suggest you set out your personal teaching philosophy and how it will be demonstrated in your teaching using, or adapting, the sample sentence introductions below.

My teaching philosophy is ……..

In view of this philosophy, I will facilitate this course by/through ……

Course Manual Writing Format

Course Information

Title Page

The vision for the New Four-Year B.Ed. Curriculum

To transform initial teacher education and train highly qualified, motivated new teachers who are effective, engaging and fully prepared to teach the basic school curriculum and so improve the learning outcomes and life chances of all learners they teach as set out in the National Teachers' Standards. In doing this to instil in new teachers the Nation's core values of honesty, integrity, creativity and responsible citizenship and to achieve inclusive, equitable, high quality education for all learners

Course Details

Course name	**Multimedia Development and use for early grade schools**					
Pre-requisite						
Course Level	200	Course Code		Credit Value	3	

Table of contents (To be provided)

Goal for the Subject or Learning Area

The goal of pedagogic studies is to equip student teachers with the foundation of the teaching profession by providing requisite instructional competencies, passion, commitment and positive attitude that ensures effective learning in diverse contexts.

Key contextual factors

The use of varying learning resources in stimulating learning at early gradeschools is critical to any learning situation especially in this technologically-driven era. However, in most early gradeschools in Ghana, some teachers do not have equal access to adequate teaching and learning resources in teaching at the early grade school level due to resource constraints. The need for teachers to be resourceful becomes imperative if they are to meet the ever-changing educational needs of learners. Knowledge and skills required to identify, select and utilise multimedia resources for effective teaching and learning become one of the core competencies that is required of any 21st century teacher. This course is expected to provide knowledge and skills for developing and using low cost instructional resources available in the immediate environment and communities, in which early grade school teachers teach, to facilitate learning among early grade school learners.

Course Description

The course is structured to expose early grade student teachers to the concept and nature of multi-media development and educational technology. Student teachers are guided to examine some constructivist theories and principles of learning suitable for early grade school learners. The course further focuses on various types of instructional media; how to develop, adapt learning materials to suit diverse learners, develop adaptive and assistive technologies for learners with SEN. Student teachers will also be guided to examine ways of evaluating, auditing and storing learning resources developed. Among others, the course will be delivered through demonstrations, projects, presentations, gallery work and peer assessment. Similarly, diverse methods including projects, gallery work and illustrative presentations would be used to assess student teachers through the three assessment components. It is expected that this would enable them use various criteria in selecting materials and also apply principles in developing and using varying multimedia and low-cost learning resources in facilitating and stimulating learning among differently abled learners in inclusive and multi-grade classrooms to improve learning. It will also equip student teachers of middle early grade learners with skills to manage transition from the Upper Early grade stage through to JHS (**NTS 1a, 3g, 3j, 3f; NTECF, p. 45**)

Core and transferable skills and cross cutting issues, including equity and inclusion

Digital literacy of student teachers will be enhanced by giving them opportunities to surf and present information across units using various digital tools

Critical thinking is developed in student teachers when they express their conceptions, misconceptions and biases towards the use of various multimedia resources.

Collaboration is fostered through assigning group projects and presentation of various topics across units.

Communicative skills of student teacher would be enhanced through group discussions, presentations, co-planning and co-teaching

Personal development would be fostered through individual and group presentation, examining personal prejudices for some multimedia resources for teaching.

Respect for diversity would be engendered in student teachers by using various criteria of group formation.

Commitment and passion for teaching would be developed when student teachers develop various multimedia resources for teaching.

Creativity: This would be enhanced by creating or developing different multimedia resources to support the learning of learners with diverse characteristics.

Course Learning Outcomes	Learning Indicators
1. Demonstrate a clear understanding among the concepts of multimedia, educational technology and instructional technology and how to develop and use low-cost materials. They should also be able to explain the importance and challenges of using multimedia resources to address misconceptions, barriers to learning (**NTS 3m**).	• Distinguish among the concepts of multimedia, educational technology and instructional technology • Identify some misconceptions and barriers to developing and using multimedia materials to support learning and explain how to address them through poster presentations.
2. Exhibit an understanding and application of the constructivist theories and the principles of learning in the use of learning materials (**NTS 2e**)	• Discuss the relevance of the constructivist theories to the use of learning materials in diverse contexts. • Apply the principles of learning in the use of learning resources in diverse learning settings.
3. Demonstrate knowledge and application of the basic elements and principles of creating visual designs using different media production techniques with low/no-cost materials and their evaluation with respect to SEN/gender suitability in order to ensure effective communication and interaction in early grade schools (**NTS 3m**).	• Develop a learning material/model for learning any concept in a specific subject area by applying the basic elements and principles of visual design using imitative media production technique. • Develop a learning material/model for learning any concept in a specific subject area by applying the basic elements and principles of visual design using adaptive media production technique. • Develop a learning material/model for learning any concept in a specific subject area by applying the basic elements and principles of visual design using creative media production technique. • Apply the principles of effective communication and deal with barriers that inhibit communication during interactions in early grade schools • Conduct SEN/gender evaluation and audit of learning resources and create various appropriate ways of storing them.
4. Demonstrate an understanding of the relevance and the use of technology (computers, mobile devices) in creating communication, and teaching and learning applications (NTS 3m).	• Discuss the relevance of the use of computers and handheld mobile devices in developing communication, and teaching and learning applications. • Use computers or handheld devices in developing applications for communicating/collaborating with colleagues and creating learning resources.

Course Content

Unit/ Week	Topic	Sub-topic if any)	Teaching and learning activity to achieve the learning outcomes
1 **CLO1**	Nature of multimedia use in learning and conceptual issues	1.1 Conceptions, misconceptions and barriers to developing multimedia resources and use; 1.2 The concept multimedia, educational technology and instructional technology; 1.3 technology in education and technology of education; 1.4 history of educational technology	1. Use pyramid discussions with mixed ability/gender based pairings for misconceptions/barriers for using multimedia resources; 2. tutor led discussions on conceptual issues; 3. using power point to map or model the development of educational technology 4. Planning for application
2 **CLO1**	Instructional media production	2.1 The concept of instructional media; 2.2 Types of instructional media; Characteristics of media; 2.3 Edgar Dale's "Cone of Experience";	1. Use animations/pictures on power point to stimulate discussion on types and characteristics; 2. mixed ability/gender based group discussion

		2.4 Classification of instructional media; 2.5 Techniques of instructional media production	and project on the techniques of media production 3. planning for application
3 **CLO 2**	Theories and principles of learning and instruction	4.1 Concept of learning; principles of learning; 4.2 Constructivist theories (e.g. Vygotsky and Piaget)	1. Student led discussion and panel discussion on the relevance of constructivist theories for multimedia use; 2. Using cases/ scenarios and concept mapping for the application of principles of learning in practice.
4	Instructional visual design and communication	4.1 Basic elements of visual design; 4.2 Principles for creating visual design; 4.3 principles and barriers of communication; 4.4 Instructional design models (only Dick & Carey's model; 4.5 ADDIE model)	1. Student led discussion with power point presentation on basic elements and principles of visual design; 2. Develop models on power point for discussion on designing models 3. Planning for ap[plication in practice
5	Models and material adaptation for inclusive classrooms and their uses	5.1 Types of models (solid, cross section, construction and working models); 5.2 Diorama and puppets; 5.3 Ways of developing learning materials using low/no cost resources; 5.4 Criteria for selecting materials; 5.5 Factors behind ineffective materials; Adaptive and Assistive Technologies (AATs) for SEN	1. Tutor led discussion on types of models and uses animations/visuals on power point; 2. Individual and group project on developing materials/models for teaching specific concepts with commentary; 3. Tutor led discussion on AATs (co-teach with SEN specialist)
6	Handheld technologies (mobile and wireless learning)	6.1 The concept handheld technology; 6.2 Properties and relevance; 6.3 Communication and collaborating applications, and teaching and learning applications.	1. Tutor led discussion on use of handheld devices, properties and relevance; 2. Demonstration and group project on creating collaborating and teaching and learning applications.
7	Storage and evaluation/audit of multimedia learning resources	7.1 Need for storage of resources; 7.2 Ways of storing types of resources; 7.3 SEN and gender audit/evaluation of resources using checklists	1. Group discussion on ways of storing resources; 2. Audio-visual and tactile analysis of how multimedia resources are stored. Tutor led discussion on criteria for evaluating resource suitable for learners with diverse needs.
Teaching and Learning Strategies			
• Concept cartoons and concept maps • Cooperative learning • Individual and group presentations • Writing of reflective notes • Think-pair-share, debates • Ishakawa or fishbone strategy			

- Team teaching – co-planning and co-teaching by tutors and lecturers with varying expertise
- Talk for learning approaches- always, sometimes, never true, convince yourself, convince a friend; pyramid discussion etc

Course Assessment Components

[1]**Component 1: Subject Portfolio Assessment (30% overall score)**

- Selected items of students work (3 of them -10% each) = 30%
- Midterm assessment = 20%
- Reflective Journal = 40%
- Organisation of the subject portfolio = 10% (how it is presented /organised)

NOTE

Summary of Assessment Method: i. mixed ability/ gender based group presentation on misconceptions/barriers and how to address them.

ii. group presentation on conceptual issues on multimedia development, constructivist theories and principles of learning.

Reflective and evaluative course journal and presentation

a. The student teacher demonstrates beginning skills and techniques of evaluation, analysis and reflection to evidence their understanding of the NTS and achievement of the CLO.
b. they reflect on what they have learnt from developing each item
c. they discuss each of the items in the portfolio to demonstrate their growing skills, knowledge and understanding of the CLOs and the NTS.
d. they identify their key strengths, areas for development and targets for their progress in the subject.

Assesses Learning Outcomes: All CLO

[2]**Component 2: Subject Project: (30% overall semester score)**

- Introduction, a clear statement of aim and purpose of the project = 10%
- Methodology: what the student teacher has done and why to achieve the purpose of the project = 20%
- Substantive or main section = 40%
- Conclusion = 30%

NOTE

Summary of Assessment Method: Individual mid semester project using imitative and adaptive production techniques and applying principles of design on media/model development using creative production technique; developing learning resources and applications using computer or handheld devices. All projects MUST come with commentaries of why, what, how it should be used, including an evaluation accessibility to target learners and how to store them. Some projects should be assessed by peers. (soft skills to be developed include: critical thinking, digital literacy, respect for diversity)
Assesses Learning Outcomes: CLO 3 and CLO 4

Component 3: **End of Semester Exams 40%**

NOTE

Summary of Assessment Method: End of Semester Examination on multimedia development, constructivist theories and principles of learning using imitative and adaptive production techniques and applying principles of design on media/model development using creative production technique; developing learning resources and applications using computer or handheld devices, communication (soft skills to be developed include: critical thinking, honesty)
Assesses Learning Outcomes: CLO 1,2, 3 and 4

Required Reading and Reference List

Adeoye, B. F. (2015). *Technology guide for teaching & learning.* Ibadan-Nigeria: His Lineage Publishing House.

Amoah, S. A., Laryea, P., & Amoako, B. M. (2016). *Fundamentals of educational technology for effective teaching and learning.* Winneba: University Press.

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Transformaing Teacher Education and Learning (2017). *Teaching and learning materials.* Accra: Ministry of Education.

Driscoll, M.P. (2005). *Psychology of learning for instruction*. Boston: Pearson Education Inc.

Gagne, R.M. & Briggs L.J. (1979). *Principles of instructional design (2nd ed.*). New York: Holt, Rinehalt, & Winston.

Gerlach, S. V., Ely, P. D., &Milnick, R. (1980). *Teaching and media: A systematic approach*. New Jersey: Englewood Cliffs.

Heinich, R., Molenda, M., Russel, J. D., &Smaldino, E. S. (1996). *Instructional media and technologies for learning (5th ed).* Prentice Hall.

Rowntree, D. (1982). *Educational technology in curriculum development*. London: Harper and Row.

Smaldino, S.E., Lowther, D.L., & Russell, D.J. (2008). *Instructional technology and media for learning* (9th ed.). Upper saddle

[1]**See rubrics on Subject Portfolio Assessment in Annex 6 of NTEAP**

[2]**See rubrics on Subject Project Assessment in Annex 6 of NTEAP**

River, NJ: EngleCliff Woods. T-tel (2016): Professional development guide for tutors on teaching and learning materials. Theme 5
Course related professional development for tutors/ lecturers
Using handheld technologies and mobile devices to create learning applications

LESSON 1

Year of B.Ed.	2	Semester	2	Place of lesson in semester	1 2 3 4 5 6 7 8 9 10 11 12

Title of Lesson	**The nature and conceptions of multimedia development and use**					**Lesson Duration**	**3 Hours**
Lesson description	The lesson will deal with varying conceptions and meaning of concepts related to the use of multimedia resources. The biases and prejudices of student teachers about the use of resources shall also be explored in order to identify ways of addressing them. The relevance for the use of multimedia resources in teaching, the challenges and how they can be addressed shall be examined.						
Previous student teacher knowledge, prior learning (assumed)	Have knowledge, understanding and use various creative approaches and play as a pedagogy learnt form "inclusive school-based inquiry". The use of these strategies require the use various resources. Have also observed teachers use various teaching and learning resources during Supported teaching in Schools. **This first lesson introduces student teachers to the course learning outcomes and the 3 assessment components of the course.**						
Possible barriers to learning in the lesson	Biases towards the use of certain resources for teaching						
Lesson Delivery – chosen to support student teachers in achieving the outcomes	**Face-to-face [√]**	**Practical Activity [√]**	**Work-Based Leaning**	**Seminars [√]**	**Independent Study [√]**	**E-learning opportunities [√]**	**Practicum**
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	Face-to-face – Discussion, lecturette, think, pair share should be used in facilitating lessons. E-learning opportunities – Videos from YouTube on various kinds of resources used for teaching and learning. Seminars: to generate group and individual creativity, discussion and reflection; student and/or tutor led on the use various learning resources. Independent study: to enable student teachers to engage with relevant issues related to topic. Practical activity: working in groups or individually on projects for presentation.						
Overarching outcome, what you want the student teachers to achieve, serves as basis for the learning outcomes. An expanded version of the description. Write in full aspects of the NTS addressed	Demonstrate a clear understanding among the concepts of multimedia, educational technology and instructional technology and how todevelop and use low-cost materials. They should also be able toexplain the importance and challenges of using multimedia resources to address misconceptions, barriers to learning(**NTS 3m**).						
• **Learning Outcome for the lesson, picked and developed from the course specification** • **Learning indicators for each learning outcome**	**Learning Outcomes**		**Learning Indicators**			**Identify which cross cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?**	
	Demonstrate a clear understanding among the concepts of multimedia, educational technology and instructional technology and how to develop and use low-cost materials. They should also be able to explain the importance and challenges of using multimedia resources to address misconceptions, barriers to learning (**NTS 3m**).		• Distinguish among the concepts of multimedia, educational technology and instructional technology. • Explain in writing the importance of developing and using multimedia resources in teaching. • Examine the barriers/challenges to developing and using multimedia resources in teaching and learning in			• Communication skills: through critiquing and presentations • Digital literacy: Surfing the internet for relevant information on themes to be discussed. • Creativity and innovation: thinking about ways of developing appropriate TMs • Equity and inclusivity:	

			early grade schools and how they can be addressed. • Explain in writing some misconceptions about developing and using multimedia materials to support learning and explain how to address them.	using various strategies in grouping students considering their background characteristics and abilities.
Topic Title: The nature and conceptions of multimedia development and use	**Sub-topic**	**Stage/time**	**Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.**	
			Teacher Activity	**Student Activity**
	Introduction	20 minutes	**Face-to-face** Review RPK of student teachers through questioning. Let them identify some resources or materials they prepared in order to make the use of some games, songs and puzzles they designed to support identified learners with difficulties during STS in year 1 (PD theme 2, 5)	**Face-to-face** Provide relevant answers to questions by talking about the various projects they worked regarding the use of games, songs etc., and the material they used in developing them.
	Concepts of multimedia resources	40 minutes	**Face-to-face** Guide student using questioning skills for them to guess the topic for discussion. Through lecturette link RPK to the use of multimedia resources. Guide student teachers to use their phones and tablets to search for meaning of concepts related to the topic: • Multimedia resources • Technology in education • Educational technology • Instructional technology • Teaching and learning resources etc. Pyramid discussion can be employed for different pairs of students to work on a different concept and compare and contract findings as groups build up. Discuss meanings read out with students and assist them through questioning to establish relationships between concepts. (PD theme 2, 3). Guide students to present findings.	**Face-to-face** Listencarefully to questions and try to link RPK to topic to be discussed. Start working in pairs and look for the meaning of the different concepts assigned to each pair and compare meanings as groups build up. Present meanings of concepts to whole class and establish linkages. Write down meanings of the different concepts.
	Need for the use of technology resource development and use, biases and misconceptions	30 minutes	**Independent study** Let students work in pairs to discuss the **need for technology in materials development** and their use and the **misconceptions and the biases** people/teachers have and **how this can be address** drawing on their experiences during STS.	**Independent study** Work in pairs, explore their experiences during STS and randomly present findings for discussion. Organise presentation using concept maps or webs

			Randomly select pairs of students to present findings for discussion on the three areas (in bold above). Use concept maps/webs to organize thoughts for students to copy.	
	Strengths and challenges for using multimedia resources for teaching and learning in early grade schools.	1hour 30 minutes	**Independent study** Guide students to explore their experiences during STS. Put them into small groups of 4 and 5 members to discuss strengths, challenges and how they can be addressed. These may be put under these suggested headings: **Strengths/benefits:** for teachers, fore learners, instructional management etc. **Challenges (sources):** teacher, learners, institution, community etc. Guide students to prepare manuscript for a brief presentation. Summarize lesson after presentations using questions and give a reading assignment. (PD 2, 4)	**Independent study** Work in various small groups to discuss the benefits and challenges of using resources as observed during STS Using digital devices to also search for information and prepare scripts for presentation.
			Reading Assignment Direct student teachers to read on the history of educational technology; types/ categories of resources, their general characteristics of multimedia resources (MRs) and their use in preparation for the next lesson	Read topics assigned for lesson 2 and make your own notes.
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	**Formative Assessment:** • Students prepare a reflective note on the relevance of the use of multimedia resources in teaching, challenges encountered in their use as observed during STS and how teachers could have addressed them.			
Instructional Resources	• Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org) • Mobile phones • Laptops • Videos from YouTube			
Required Text (core)	Adeoye, B. F. (2015). *Technology guide for teaching & learning.* Ibadan-Nigeria: His Lineage Publishing House. Amoah, S. A., Laryea, P., & Amoako, B. M. (2016). *Fundamentals of educational technology for effective teaching and learning.* Winneba:University Press. Sarfo, F. K. (2008*). Educational technology*. Kumasi: Wilas Press Ltd.			
Additional Reading List	rmaing Teacher Education and Learning (2017). *Teaching and learning materials.* Accra: Ministry of Education. Heinich, R., Molenda, M., Russel, J. D., &Smaldino, E. S. (1996). *Instructional media and technologies for learning (5th ed).* Prentice Hall. ee, D. (1982). *Educational technology in curriculum development*. London: Harper and Row			
CPD needs	PD Theme 1(creative approaches) and Theme 5 (teaching and learning materials)			

LESSON 2

Year of B.Ed.	2	Semester	2	Place of lesson in semester	1 2 3 4 5 6 7 8 9 10 11 12

Title of Lesson	**Instructional media Production**				**Lesson Duration**	**3 Hours**	
Lesson description	Lesson will focus on the types and characteristics of multimedia resources. The specific features of the various types will be explored and their used discussed using various modes of delivery.						
Previous student teacher knowledge, prior learning (assumed)	Have an understanding of what multimedia resources are, their importance and challenges inhibiting their use in educational settings. They have also been exposed to different learning styles under psychological basis of learning and have observed resources being used for teaching during STS						
Possible barriers to learning in the lesson	Biases towards the use of certain resources for teaching and learning.						
Lesson Delivery – chosen to support student teachers in achieving the outcomes	**Face-to-face [√]**	**Practical Activity [√]**	**Work-Based Leaning**	**Seminars [√]**	**Independent Study [√]**	**E-learning opportunities [√]**	**Practicum**
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	Face-to-face – Discussion, lecturette, think, pair share should be used in facilitating lessons. E-learning opportunities – Videos from YouTube on various kinds of resources used for teaching and learning. Seminars: to generate group and individual creativity, discussion and reflection; student and/or tutor led on the use various learning resources. Independent study: to enable student teachers to engage with relevant issues related to topic. Practical activity: working in groups or individually on projects for presentation.						
Overarching outcome, what you want the student teachers to achieve, serves as basis for the learning outcomes. An expanded version of the description. Write in full aspects of the NTS addressed	PD theme 1(Creative approaches) and theme 5 (teaching and learning materials) Demonstrate a clearknowledge of the types, general and specific characteristics of the types of multimedia resources (**NTS 3c, j)**.						
• **Learning Outcome for the lesson, picked and developed from the course specification** • **Learning indicators for each learning outcome**	**Learning Outcomes**		**Learning Indicators**		**Identify which cross cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?**		
	Demonstrate a clear knowledge of the types, general and specific characteristics of the types of multimedia resources (**NTS 3 c, j**).		• Analyse Edgar Dale's cone of experience and its relevance to teaching and learning. • Identify the types of multimedia resources based on their characteristics. • Discuss the importance of the use of each of the types of resources for teaching and learning in early grade schools.		• Creativity and innovation: Creating TLMs for teaching and learning • Digital literacy: using their mobile devices to search for information • Communication skills: through critiquing and presentations • Equity and inclusivity: using various strategies in grouping students considering their background characteristics and abilities.		

Topic title: Types and characteristics of multimedia resources	Sub-topic	Stage/time	Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.	
			Teacher Activity	**Student Activity**
	Introduction	20 minutes	**Face-to-face** Review RPK based on students' knowledge of the meaning, strengths and challenges instructional media (PD theme 2)	
	Edgar Dale's cone of experience **Types and characteristics of resources**	50 minutes	**Independent study** Show a short video on Edgar Dale's cone of experience. Guide student teachers to analyse and discuss the relevance of using multimedia resources that appeals to multiple senses in teaching Put student teachers into smaller groups. Identify group leaders to select a type on behalf of the group for them to search on and present in class using power point and show illustrations and animations. Groups should pick anyone of the following: Visual materials, audio materials, and audio visual material Guide groups examine their experiences during STS and focus on type, purpose, characteristics and importance for teaching and learning using a selected type of resource Group should select an 'expert' to do the presentation on their behalf (PD theme 2, 4)	**Independent study** Watch video and do an analysis of the relevance of using multimedia resources for teaching and learning drawing on their experiences from STS Work in groups on the type chosen by the group. Prepare power point presentation with relevant illustrations and animations and select an 'expert' to present on behalf of the group. Observe, listen and ask questions after presentations. Peer assess and score presentation and quality of slides.
		60 hour	**Independent study** In their small groups, guide student teachers to select a particular type of media from a category e.g., radio, television, computer etc. and explain WHAT and HOW they can be used in teaching and learning. Groups may be guided to present to whole class or do jigsaw/cross group presentations (PD theme 2, 3)	**Independent study** Select a particular type of media and explain what and how they can be used in teaching. Various groups present their work
	Criteria for selecting and using multimedia resources	40 minutes	**Face-to-face** Use lecturette and questioning to stimulate discussion on criteria for selecting and using resources (PD theme 2)	**Face-to-face** Listen and answer questions and use their mobile phones to search for information online
		10 minutes	Summarise lesson noting key issues raised. Give a reading assignment on topic to be treated in lesson 3: Theories and principles of learning.	Take note of key issues raised and topic to be treated in lesson 3.

Lesson assessments – evaluation of learning: of, for and as learning within the lesson	**Formative Assessment:** Power point presentation on types, characteristics and importance of selected resource for teaching and learning. Peers observe, comment and score.
Instructional Resources	• Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org) • Mobile phones, Laptops, Videos from YouTube, Animations and pictures.
Required Text (core)	Adeoye, B. F. (2015). *Technology guide for teaching & learning.* Ibadan-Nigeria: His Lineage Publishing House. Amoah, S. A., Laryea, P., & Amoako, B. M. (2016). *Fundamentals of educational technology for effective teaching and learning.* Winneba:University Press. Sarfo, F. K. (2008*). Educational technology*. Kumasi: Wilas Press Ltd.
Additional Reading List	rming Teacher Education and Learning (2017). *Teaching and learning materials.* Accra: Ministry of Education. Heinich, R., Molenda, M., Russel, J. D., &Smaldino, E. S. (1996). *Instructional media and technologies for learning (5th ed).* Prentice Hall. ee, D. (1982). *Educational technology in curriculum development*. London: Harper and Row
CPD needs	PD Theme 1(creative approaches) and Theme 5 (teaching and learning materials)

LESSON 3

Year of B.Ed.	2	Semester	2	Place of lesson in semester	1 2 **3** 4 5 6 7 8 9 10 11 12

Title of Lesson	**Theories and principles of learning and instruction**					**Lesson Duration**	**3 Hours**
Lesson description	Lesson is designed to expose student teachers to the constructivist theories and principles of learning. Student teachers will examine how the theories and principles influence the development and use of multimedia resources for teaching and learning of early grade school pupils with diverse needs.						
Previous student teacher knowledge, prior learning (assumed)	Student teachers have observed the development and use of some teaching and learning resources by teachers during supported teaching in schools and have also read relevant topics related to the lesson.						
Possible barriers to learning in the lesson	May have little knowledge and understanding of topic to be treated. The large class sizes.						
Lesson Delivery – chosen to support student teachers in achieving the outcomes	**Face-to-face [√]**	**Practical Activity [√]**	**Work-Based Leaning**	**Seminars [√]**	**Independent Study [√]**	**E-learning opportunities [√]**	**Practicum**
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	Face-to-face – Discussion, lecturette, think, pair share should be used in facilitating lessons. E-learning opportunities – Videos from YouTube on various kinds of resources used for teaching and learning. Seminars: to generate group and individual creativity, discussion and reflection; student and/or tutor led on the use various learning resources. Independent study: to enable student teachers to engage with relevant issues related to topic. Practical activity: working in groups or individually on projects for presentation.						
Overarching outcome, what you want the student teachers to achieve, serves as basis for the learning outcomes. An expanded version of the description. **Write in full aspects of the NTS addressed**	Exhibit knowledge, understanding and application of the theories and the principles of instruction and learning. As well as the development and use of multimedia resources (**NTS 2e**).						
• **Learning Outcome for the lesson, picked and developed from the course specification** • **Learning indicators for each learning outcome**	**Learning Outcomes**		**Learning Indicators**		**Identify which cross cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?**		
	Exhibit an understanding and application of the constructivist theories and the principles of learning in the development and use of multimedia resources (**NTS 2e**)		• Discuss the relevance of the constructivist theories to development and use of learning materials in early grade schools. • Apply the principles of learning in the use of learning resources in diverse learning settings in early grade schools.		• Communication skills: through critiquing and presentations • Digital literacy: Surfing the internet for relevant information on themes to be discussed. • Personal development: Through presentation and developing of arguments in support of the use of resources for teaching. • Equity and inclusivity: using various strategies in grouping students considering their background characteristics and abilities. • Critical thinking: Develops this skills by examining theories and principles and their application.	

Topic Title: Theories and principles of learning and instruction	Sub-topic	Stage/time	Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.	
			Teacher Activity	**Student Activity**
	Introduction	30 minutes	**Face-to-face** Review RPK through questioning. Ask student teacher to share their observations on what and how early grade school teachers use various resources in teaching. (PD theme 2)	**Face-to-face** Provide relevant answers by sharing observations during STS with class.
		60 minutes	**Lecturette and student-led discussion** Select and guide two student teachers to lead discussion on the Vygotsky and Piaget's perspectives on constructivist theories Guide them to lead class to discuss their relevance for multimedia development and use. Give student teachers an assignment on comparing and contrasting the perspectives of the two proponents. (PD theme 2) Guide students to discuss the difference between constructivism and traditional teaching practices.	**Student-led discussion** Participate in a student-led discussion on relevance of theories to use of resources. Write down the take home assignment. Compare and contrast constructivism from the perspectives of the two proponents. Discuss the differences and make notes.
		60 minutes	**Face-to-face& Independent study** Lead the discussion on the application of principles of learning using cases/ scenarios and concept mapping. (PD theme 2)	**Face-to-face& independent study** Participate in discussion by answering relevant questions and searching for information online using their mobile phones.
		30 minutes	Guide student teachers to summarise lesson by identifying key points. Ask student teachers to read relevant topics for next lesson.	Answer questions and note down key points from the lesson. Take note of topic for lesson 4 and read on it.
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	**In-lesson Assessment:** A take home assignment on comparing and contrasting Vygotsky and Piaget's perspectives on constructivism and its implications for development and use of resources.			
Instructional Resources	• Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org) • Mobile phones • Laptops			

	• Videos from YouTube
Required Text (core)	Adeoye, B. F. (2015). *Technology guide for teaching & learning.* Ibadan-Nigeria: His Lineage Publishing House. Amoah, S. A., Laryea, P., & Amoako, B. M. (2016). *Fundamentals of educational technology for effective teaching and learning.* Winneba:University Press. Sarfo, F. K. (2008*). Educational technology*. Kumasi: Wilas Press Ltd.
Additional Reading List	Transforming Teacher Education and Learning (2017). *Teaching and learning materials.* Accra: Ministry of Education. Heinich, R., Molenda, M., Russel, J. D., &Smaldino, E. S. (1996). *Instructional media and technologies for learning (5th ed).* Prentice Hall. Rowntree, D. (1982). *Educational technology in curriculum development*. London: Harper and Row
CPD needs	Constructivism and it application to the use of resources

LESSON 4

Year of B.Ed.	2	Semester	2	Place of lesson in semester	1 2 3 **4** 5 6 7 8 9 10 11 12

Title of Lesson	**Instructional and visual design**					**Lesson Duration**	**3 Hours**
Lesson description	The lesson will focus on basic elements of visual design and the principles for creating visual design. Lesson shall be delivered in various modes and student teachers are expected to apply the various principles in developing teaching learning resources for learners with diverse needs in early grade classrooms.						
Previous student teacher knowledge, prior learning (assumed)	Student have knowledge and understanding of theories and principles of learning and observed teacher developing and using TLMs during supported teaching in schools.						
Possible barriers to learning in the lesson	Biases towards the use of certain resources for teaching						
Lesson Delivery – chosen to support student teachers in achieving the outcomes	**Face-to-face [√]**	**Practical Activity [√]**	**Work-Based Leaning**	**Seminars [√]**	**Independent Study [√]**	**E-learning opportunities [√]**	**Practicum**
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	Face-to-face – Discussion, lecturette, think, pair share should be used in facilitating lessons. E-learning opportunities – Videos from YouTube on various kinds of resources used for teaching and learning. Seminars: to generate group and individual creativity, discussion and reflection; student and/or tutor led on the use various learning resources. Independent study: to enable student teachers to engage with relevant issues related to topic. Practical activity: working in groups or individually on projects for presentation.						
Overarching outcome, what you want the student teachers to achieve, serves as basis for the learning outcomes. An expanded version of the description. **Write in full aspects of the NTS addressed**	Demonstrate knowledge and understanding of the use of basic elements of visual design and the principles for creating visual design. NTS 3m						
• **Learning Outcome for the lesson, picked and developed from the course specification** • **Learning indicators for each learning outcome**	**Learning Outcomes**		**Learning Indicators**			**Identify which cross cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?**	
	Demonstrate knowledge and understanding of the use of basic elements of visual design and the principles for creating visual design. NTS 3m		• Apply basic elements and principles of visual design to develop appropriate teaching and learning materials for pupils in early grade schools.			• Communication skills: through critiquing and presentations • Digital literacy: Surfing the internet for relevant information on themes to be discussed. • Personal development: Through presentation and developing of arguments in support of the use of resources for teaching. • Equity and inclusivity: using various strategies in grouping students considering their background characteristics and abilities.	

Topic Title: Instructional and visual design	Sub-topic	Stage/time	Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.	
			Teacher Activity	**Student Activity**
	Introduction	20 minutes	**Face-to-face** Review RPK through questioning the nature of some of the TLMs they have observed teachers use in class during supported teaching in schools. (PD theme 2)	
	Basic elements of visual design	50 minutes	**Face-to-face&E-learning** Use videos and animations on slides to initiate discussions on the basic elements of visual design. Guide student teachers to illustrate how the elements can be used in generating various images (PD theme 2, 5)	**Face-to-face &E-learning** Watch/observe, analyse and answer questions. Use writing/drawing materialsto illustrate how the elements can be applied.
	Principles of visual design	50 minutes	**Face-to-face &E-learning** Use videos and animations on slides to initiate discussions on the principles of visual design. Guide student teachers to illustrate how the principles can be used in generating various images (PD theme 2, 5)	**Face-to-face &E-learning** Watch/observe, analyse and answer questions. Use writing/drawing materials to illustrate how the principles can be applied.
		60 minutes	**Independent study** Assign student teachers a task. Guide them to combine both the elements and principles in sketching/drawing various simple images for display and peer review (PD theme 2, 5)	**Independent study** Apply the elements and principles in drawing/sketching images for display and peer review.
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	**In-lesson Assessment:** Peers assess and critique displayed images of colleagues and score – you will need criteria. ~~Weighting: 30%~~			
Instructional Resources	• Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org) • Mobile phones • Laptops • Videos from YouTube • Drawing pads, pencils, pens • Cardboards • Resource person with expertise in art			
Required Text (core)	Adeoye, B. F. (2015). *Technology guide for teaching & learning.* Ibadan-Nigeria: His Lineage Publishing House. Amoah, S. A., Laryea, P., & Amoako, B. M. (2016). *Fundamentals of educational technology for effective teaching and learning.* Winneba: University Press. Sarfo, F. K. (2008*). Educational technology*. Kumasi: Wilas Press Ltd.			
Additional Reading List	rmaing Teacher Education and Learning (2017). *Teaching and learning materials.* Accra: Ministry of Education. Heinich, R., Molenda, M., Russel, J. D., &Smaldino, E. S. (1996). *Instructional media and technologies for learning (5th ed).* Prentice Hall. Rowntree, D. (1982). *Educational technology in curriculum development*. London: Harper and Row			
CPD needs	Using basic elements and principles in developing teaching and learning resources.			

LESSON 5

Year of B.Ed.	2	Semester	2	Place of lesson in semester	1 2 3 4 **5** 6 7 8 9 10 11 12

Title of Lesson	**Concept and principles of effective communication**					**Lesson Duration**	**3 Hours**
Lesson description	The lesson is designed to expose student teachers to the concept and principles of effective communication. The model of communication, barriers to communication in class and how to address them shall also be discussed. Lesson shall be delivered using various modes of delivery in order to make it interactive.						
Previous student teacher knowledge, prior learning (assumed)	Knowledge and understanding of the use of audio and audio-visual resources and how they are used for instructional purposes. The have observed teachers also observed teachers teaching during STS and are also communicating with pupils by co-planning and co-teaching.						
Possible barriers to learning in the lesson	Students have not started teaching full classes and may therefore have difficulties in conceptualising how to effectively communicate in class.						
Lesson Delivery – chosen to support student teachers in achieving the outcomes	**Face-to-face [√]**	**Practical Activity [√]**	**Work-Based Leaning**	**Seminars [√]**	**Independent Study [√]**	**E-learning opportunities [√]**	**Practicum**
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	Face-to-face – Discussion, lecturette, think, pair share should be used in facilitating lessons. E-learning opportunities – Videos from YouTube on the communication model and principles of communication. Seminars: to generate group and individual creativity, discussion and reflection; student and/or tutor led on barriers to communication and how to address them. Independent study: to enable student teachers to engage with relevant issues related to topic. Practical activity: working in groups or individually on projects for presentation.						
Overarching outcome, what you want the student teachers to achieve, serves as basis for the learning outcomes. An expanded version of the description. Write in full aspects of the NTS addressed	Demonstrate knowledge and understanding of application of principles of communication and how to deal with the barriers of communication in early grade classrooms. NTS 3i						
• **Learning Outcome for the lesson, picked and developed from the course specification** • **Learning indicators for each learning outcome**	**Learning Outcomes**	**Learning Indicators**			Identify which cross cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?		
	Demonstrate knowledge and understanding of application of principles of communication and how to deal with the barriers of communication in early grade classrooms. NTS 3i	• Explain the concept communication • Identify the elements of communication with regard to teaching and learning in early grade schools. • Discuss the seven principles (7Cs) for ensuring effective communication in early grade schools. • Examine barriers to effective communication in early grade schools and how to address them.			• Communication skills: through critiquing and presentations • Digital literacy: Surfing the internet for relevant information on themes to be discussed. • Personal development: Through presentation and developing of arguments in support of the use of resources for teaching.		

				• Equity and inclusivity: using various strategies in grouping students considering their background characteristics and abilities.
Topic Title: The concept and principles of effective communication	**Sub-topic**	**Stage/time**	**Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.**	
			Teacher Activity	**Student Activity**
	Introduction	10 minutes	Face-to-face Through questioning review student teachers RPK and link it to the topic for discussion. (PD theme 2)	Listen attentively and answer questions related to RPK.
	The concept 'communication'	20 minutes	**Face-to-face** Guide pupils to think-pair and share the meaning of communication. Let them use their phones to search for various meanings and definitions and share with class. Guide to them to explain communication within the context of teaching and learning (PD theme 2, 3, 5)	**Face-to-face** Think-pair and share the meaning of communication with peers. Use phones to search for meaning and share with whole class. Explain the meaning in the context of teaching and learning.
	Elements of communication	40 minutes	**Independent study and E-learning** Put student teachers in small groups to search for the elements of communication using their phones and discuss in their groups. Guide selected groups to share their findings with the whole class for discussion. Project a model on slides illustrating the various elements and their interactions (Encoder, channel, decoding etc) Guide student teachers to examine and identify who/what these elements represent in the classroom context, for example Encoder-teacher. (PD theme 2, 3, 4, 5)	**Independent study and E-learning** Work in small groups on the elements of communication and present to class for discussion Observe communication model, identify elements and how they interact and explain Explain who/what the elements represent in the teaching and learning context.
	Principles for effective communication	50 minutes	**Independent study** Put student teachers into seven groups and share the seven principles amongst them. Guide each group to examine the meaning of the principles and how it applies in the classroom context.	**Independent study and E-learning** Work in various groups on a principle and share information with other groups through jigsaw or cross group presentations. Each group presents to

			Guide pupils to do jigsaw or cross group presentations. Let groups present to whole class and use concept maps to organize information provided. (PD theme 2, 3, 4, 5)	whole class for further discussion.
	Barriers to communication and how to address them	60 minutes	**Face-to-face & independent study** Through questioning and brainstorming, guide student teachers to identify barriers to communication in the classroom and during teaching and learning. Put student teachers into small groups consistent with the number of barriers identified. Guide them to discuss what the barriers are and how they can be addressed by the teacher to ensure effective teaching and learning. Guide student teachers to do a jigsaw or cross group presentation. (PD theme 2, 3, 4, 5)	**Face-to-face & independent study** Brainstorm on barriers to communication in class by using your phones to search. Work in groups on barriers assigned and how they can be addressed. Present findings to other groups for discussion.
			Guide groups to present to whole class briefly on the barrier and how to deal/address it as a teacher. (PD theme 2)	
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	**Formative Assessment:** Topic treated should be part of end of semester examination.			
Instructional Resources	• TESSA (2016). *Inclusive education tool kit*. Walton Hall: United Kingdom • Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org) • Transforming Teacher Education and Learning (2016). *Talk for learning: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • Transforming Teacher Education and Learning (2016). *Group work: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • Videos from YouTube • Mobile phones • Laptops			
Required Text (core)	Adeoye, B. F. (2015). *Technology guide for teaching & learning.* Ibadan-Nigeria: His Lineage Publishing House. Amoah, S. A., Laryea, P., & Amoako, B. M. (2016). *Fundamentals of educational technology for effective teaching and learning.* Winneba: University Press. Sarfo, F. K. (2008*). Educational technology*. Kumasi: Wilas Press Ltd.			
Additional Reading List	rmaing Teacher Education and Learning (2017). *Teaching and learning materials.* Accra: Ministry of Education. Heinich, R., Molenda, M., Russel, J. D., &Smaldino, E. S. (1996). *Instructional media and technologies for learning (5th ed).* Prentice Hall. Rowntree, D. (1982). *Educational technology in curriculum development*. London: Harper and			

	Row
CPD needs	

LESSON 6

Year of B.Ed.	2	Semester	2	Place of lesson in semester	1 2 3 4 5 **6** 7 8 9 10 11 12

Title of Lesson	**Concept, Types, Characteristics and uses of community resources**					**Lesson Duration**	**3 Hours**
Lesson description	The lesson is designed to expose student teachers to the concept of community resources, the types and how they are used for instructional purposes. Lesson shall be delivered using various modes of delivery in order to make it interactive.						
Previous student teacher knowledge, prior learning (assumed)	Knowledge and understanding of the use of audio and audio-visual resources and how they are used for instructional purposes. The have observed teachers developing and using various materials from the community to teach during supported teaching in schools. They can also apply basic elements and principles in developing materials for teaching and learning						
Possible barriers to learning in the lesson	Biases towards the use of certain resources for teaching						
Lesson Delivery – chosen to support student teachers in achieving the outcomes	**Face-to-face [√]**	**Practical Activity [√]**	**Work-Based Leaning**	**Seminars [√]**	**Independent Study [√]**	**E-learning opportunities [√]**	**Practicum**
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	Face-to-face – Discussion, lecturette, think, pair share should be used in facilitating lessons. E-learning opportunities – Videos from YouTube on various kinds of resources used for teaching and learning. Seminars: to generate group and individual creativity, discussion and reflection; student and/or tutor led on the use various learning resources. Independent study: to enable student teachers to engage with relevant issues related to topic. Practical activity: working in groups or individually on projects for presentation.						
Overarching outcome, what you want the student teachers to achieve, serves as basis for the learning outcomes. An expanded version of the description. Write in full aspects of the NTS addressed	Demonstrate knowledge and understanding of how community resources can be used for teaching and learning in diverse learning contexts. (**NTS 3 c, j)**						
• **Learning Outcome for the lesson, picked and developed from the course specification** • **Learning indicators for each learning outcome**	**Learning Outcomes**		**Learning Indicators**		Identify which cross cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?		
	Demonstrate knowledge and understanding of how community resources can be used for teaching and learning in diverse learning contexts. (**NTS 3 c, j)**		• Categorise community resources based on their characteristics. • Create teaching and learning materials from community resources • Explain how teaching and learning materials developed from community resources can be used to teach various concepts at the early grade school		• Communication skills: through critiquing and presentations • Digital literacy: Surfing the internet for relevant information on themes to be discussed. • Creativity and innovation: Using community resources to develop TLMs • Equity and inclusivity: using various strategies in grouping students considering their background characteristics and abilities.		

Topic Title: Concept, Types, Characteristics and uses of community resources	Sub-topic	Stage/time	Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.	
			Teacher Activity	**Student Activity**
	Introduction	30 minutes	**Face-to-face** Guide a student teacher in leading the class to review RPK on multimedia resources and the resources teachers use that have been observed during STS.	Provide relevant answers to questions relating to RPK.
		60 minutes	**Face-to-face& student-led discussion** Guide selected expert student teacher to facilitate lesson by using questioning to explore student teachers' understanding of community resources. (PD theme 2, 4, 5) and types of TLMs: • Paper made TLMs • Wood made TLMs • Metal made TLMs • Plastic made TLMs	**Face-to-face & student-led discussion** A selected student leads discussions. Respond to questions. Use mobile phones to search for information relative to questions asked.
		60 minutes	**Practical work** Guide expert student teacher(s) to put peers into small groups for them to select any one of the types and explain what it is; indicate types of materials that can be created from that material, characteristics, criteria, importance and how they can be preserved/stored. Assist expert student teacher to guide groups to present whole class for discussion. (PD theme 2, 3, 4, 5)	**Practical work** Work in groups on the type of material selected and follow guidelines provided by expert student teacher. Present assignment in posters to whole class for discussion.
		30 minutes	**Practical activity** Pair student teachers in their groups to prepare a TLM from selected material and explain how and what it can be used to teach in their specialisms. This has to be presented before the next lesson. (PD theme 4, 5)	**Practical Activity** Work in pairs to produce a TLM based on instructions given and present before next lesson.
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	**Formative Assessment:** In-lesson assessment of presentation by peers TLM prepared and presented			
Instructional Resources	• Mobile phones • Laptops • Videos from YouTube			
Required Text (core)	Adeoye, B. F. (2015). *Technology guide for teaching & learning.* Ibadan-Nigeria: His Lineage Publishing House. Amoah, S. A., Laryea, P., & Amoako, B. M. (2016). *Fundamentals of educational technology for effective teaching and learning.* Winneba:University Press. Sarfo, F. K. (2008*). Educational technology*. Kumasi: Wilas Press Ltd.			
Additional Reading List	rmaing Teacher Education and Learning (2017). *Teaching and learning materials.* Accra: Ministry			

	of Education. Heinich, R., Molenda, M., Russel, J. D., &Smaldino, E. S. (1996). *Instructional media and technologies for learning (5th ed).* Prentice Hall. Rowntree, D. (1982). *Educational technology in curriculum development*. London: Harper and Row
CPD needs	Preparing TLM using various community resources

LESSON 7

Year of B.Ed.	2	Semester	2	Place of lesson in semester	1 2 3 4 5 6 **7** 8 9 10 11 12

Title of Lesson	**Instructional and visual Design II**						**Lesson Duration**	**3 Hours**
Lesson description	This lesson is aimed at introducing student teachers to two instructional design models, Dick and Carey's Model and ADDIE Model. This lesson aims at helping student teachers to apply the knowledge on basic elements of visual design, and principles for creating visual design to the use of Dick and Carey's Model and ADDIE Model in designing instruction for effective learning outcomes.							
Previous student teacher knowledge, prior learning (assumed)	Student teachers have been exposed to the concept of instructional media, types and characteristics of instructional media. Again, student teachers have been introduced to basic elements of visual design, and principles for creating visual design.							
Possible barriers to learning in the lesson	Challenges faced with inadequate ICT related resources and tools for instructional and visual design, as well as unstable internet connectivity. Large class size could also be a barrier.							
Lesson Delivery – chosen to support students in achieving the outcomes	**Face-to-face [√]**	**Practical Activity [√]**	**Work-Based Leaning**	**Seminars [ ]**	**Independent Study [√]**	**E-learning opportunities [√]**	**Practicum**	
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	**Face-to-face:** Questioning and shower thoughts. **Practical work, Independent study and seminars:** Jigsaw with cross grouping to enable student teachers to work in groups to discuss and present project reports. **E-learning opportunities:** Watching of short videos, animations and using digital devices for searching, assembling and presenting information.							
• **Overarching outcome, what you want the students to achieve, serves as basis for the learning outcomes. An expanded version of the description.** • **Write in full aspects of the NTS addressed**	By the end of the lesson, it is expected that student teachers would be able to design and develop a learning material/model for learning any concept in a specific subject area by applying Dick and Carey's Model and ADDIE Model. Through this, it is expected that student teachers would understand and appreciate the need for collaboration, team work and communication by considering gender and equality, diversity and SEN, as well as integrating ICT in instructional processes **(NTS 1a, 2c, 3c, 3d, 3e, 3f, 3g, 3m, 3p).**							
• **Learning Outcome for the lesson, picked and developed from the course specification** • **Learning indicators for each learning outcome**	**Learning Outcomes**			**Learning Indicators**			**Identify which cross cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?**	
	Demonstrate knowledge and understanding of the concept, instructional design. Demonstrate knowledge, understanding and skills in using Carey's Model in designing instruction for learners in inclusive and developmentally appropriate upper early grade classrooms. Demonstrate knowledge, understanding and skills in using ADDIE Model in designing instruction for learners in inclusive and developmentally appropriate upper early grade classrooms.			• Explain instructional design as a means of improving instruction and learning outcomes in inclusive, multi-grade and developmentally appropriate upper early grade classrooms. • Explain the features of Carey's Model and apply it in designing and developing materials for learning in a specific upper early grade subject. • Explain the features of ADDIE Model and apply it in designing and developing			• Integration of ICT by utilising short videos from YouTube and other online resources. • Collaboration and communication through group presentations. • Gender, equity through fair distribution of teaching and learning opportunities in and out of classroom, inclusivity, and diversity through acknowledgment of individual differences in the classroom. • Reflection and critical thinking for self-awareness through multi and varied interactive strategies to support learners with diverse characteristics. • Creativity and innovation: developing TLMs using various designs	

	Demonstrate knowledge and understanding on differences and similarities between Carey's Model and the ADDIE Model, and the advantages of using them during instructional activities in inclusive and developmentally appropriate upper early grade classrooms.		materials for learning in a specific upper early grade subject area. • Discuss the differences and similarities between Carey's Model and ADDIE Model, and the advantages of using them during instructional activities in inclusive and developmentally appropriate upper early grade classrooms.	
Topic Title: Instruction and Visual Design II	**Sub-topic**	**Stage/time**	**Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.**	
			Teacher Activity	**Student Activity**
	Instructional Design Models (Carey's Model and ADDIE Model)	**40 minutes**	**Face-to-face:** Use questioning and shower thought to assist student teachers to review their previous knowledge and experiences on the use of assistive and adaptive devices in instructional processes to introduce lesson to explain instructional design. Use tutor-led discussion to introduce student teachers to Carey's Instructional Design Model and ADDIE Instructional Model (PD Theme 2; pp. 5-14; PD Theme 3; pp. 75-82).	**Face-to-face** Student teachers share and build on their knowledge and experiences on the use of assistive and adaptive devices in instructional processes to explain instructional design. Through tutor-led discussion, student teachers understand the characteristics of Carey's Instructional Design Model and ADDIE Instructional Model. Student teachers, in jigsaw with cross grouping, design materials for learning in a specific subject for an inclusive upper early grade classroom and submit their project work for marking.
		70 minutes	**Independent Study and Practical Work/Project:** Use jigsaw with cross grouping to enable student teachers to discuss and apply Carey's Instructional Design Model and ADDIE Instructional Design Model to design materials for learning in a specific subject for an inclusive upper early grade classroom as a project work to be submitted for marking (PD Theme 4; pp. 69-98; PD Theme 5; pp. 29-60).	**Independent Study and Practical Work/Project:** Discuss assigned models in groups and do a jigsaw or cross presentation.

			Independent Study: Use mixed gender and mixed attainment group work to assist student teachers to discuss the differences and similarities between Carey's Model and ADDIE Model, and the advantages of using them in inclusive upper early grade classrooms. Groups are to present their findings in a poster form (PD Theme 4; pp. 19-44). Guide student teachers to examine how the models are applicable in classroom contexts	**Independent Study:** Through mixed gender and mixed attainment group activities, student teachers discuss the differences and similarities between Carey's Model and ADDIE Model, as well as the advantages of using them in inclusive upper early grade classrooms. Student teachers present their findings in a poster form. Examine the application of the models in real life contexts.
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	**In-lesson Assessment:** This should be part of summative assessment Differences and similarities between Carey's Model and ADDIE Model, advantages of using Carey's Instructional Design Model and ADDIE Instructional Design Model. Examine its application in real life contexts.			
Instructional Resources	• TESSA (2016). *Inclusive education tool kit*. Walton Hall: United Kingdom • Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org) • Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org) • Transforming Teacher Education and Learning (2016). *Talk for learning: Professional development guide fortutors*. Accra. Ministry of Education (www.t-tel.org). • Transforming Teacher Education and Learning (2016). *Group work: Professional development guide for tutors*.Accra. Ministry of Education (www.t-tel.org). • Transforming Teacher Education and Learning (2016). *Questioning: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • YouTube			
Required Text (core)	Adeoye, B. F. (2015). *Technology guide for teaching & learning.* Ibadan-Nigeria: His Lineage Publishing House. Amoah, S. A., Laryea, P., & Amoako, B. M. (2016). *Fundamentals of educational technology for effective teaching and learning.* Winneba: UEW Press. Gagne, R. M. & Briggs, L. J. (1979). Principles of instructional design (2nd ed.). New York: Holt, Rinehalt, & Winston. Sarfo, F. K. (2008). Educational technology. Kumasi: Wilas Press Ltd. Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org).			
Additional Reading List	Driscoll, M.P. (2005). *Psychology of learning for instruction*. Boston: Pearson Education Inc. Rowntree, D. (1982). *Educational technology in curriculum development*. London: Harper and Row. Smaldino, S.E., Lowther, D.L., & Russell, D.J. (2008). *Instructional technology and media for learning* (9th ed.). Upper saddle River, NJ: Engle Cliff Woods			
CPD needs	Workshop on instructional design models			

LESSON 8

Year of B.Ed.	2	Semester	2	Place of lesson in semester	1 2 3 4 5 6 7 **8** 9 10 11 12

Title of Lesson	**Models and Material Adaptation for Inclusive Classrooms and their Uses I**					**Lesson Duration**	**3 Hours**
Lesson description	This lesson aims at exposing student teachers to types of models by specifically considering solid models, cross section models, construction and working model, dioramas and puppets. The lesson also seeks to introduce student teachers to the appropriate ways of developing learning materials using low or no cost resources.						
Previous student teacher knowledge, prior learning (assumed)	Student teachers have been introduced to basic elements of visual design, principles for creating visual design, and instructional design models (Carey's Instructional Design Model and ADDIE Instructional Model). Student teachers have also observed their teachers applying instructional design models in their instructional activities. Again, they have watched short videos from YouTube and other online resources about how instructional design models are developed and used to teach.						
Possible barriers to learning in the lesson	Inadequate ICT tools and poor internet connectivity. Large class size could also be a barrier.						
Lesson Delivery – chosen to support students in achieving the outcomes	**Face-to-face [√]**	**Practical Activity [√]**	**Work-Based Leaning**	**Seminars [ ]**	**Independent Study [√]**	**E-learning opportunities [√]**	**Practicum**
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	**Face-to-face:** Questioning and shower thoughts. **E-learning opportunity and Independent study:** Watching short videos, animations and simulations from YouTube and other online resources designed on power point showing ways of developing types of models for learning **Practical Work and Project:** Use jigsaw with cross grouping to enable student teachers to work in groups to design learning materials using low or no cost resources based on the types of models.						
• **Overarching outcome, what you want the students to achieve, serves as basis for the learning outcomes. An expanded version of the description.** • **Write in full aspects of the NTS addressed**	Student teachers would be able to demonstrate knowledge and understanding of the types of models, including solid, cross section, construction and working models, diorama and puppets. They would also be expected to demonstrated knowledge, understanding and skills on the ways of developing learning materials using low/no cost resources project work. It is expected that student teacher would be able to develop developing materials/models for teaching specific concepts in inclusive upper early grade classrooms, especially during Supported Teaching in Schools (STS). It is also the expectation that core and transferable skills including gender, equity, diversity, collaboration, team work, communication, reflective practice and critical thinking would be developed among student teachers at the end of the lesson. **(NTS 1a, 2c, 3c, 3d, 3e, 3f, 3g, 3m, 3p).**						
• **Learning Outcome for the lesson, picked and developed from the course specification** • **Learning indicators for each learning outcome**	**Learning Outcomes**		**Learning Indicators**			**Identify which cross cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?**	
	Demonstrate knowledge and understanding of the types of models (solid, cross section, construction and working models, diorama and puppets) used for designing materials for teaching specific concepts in inclusive upper early grade classrooms. Demonstrate knowledge, understanding and skills in developing learning		• Create various models (solid, cross section, construction and working models, diorama and puppets) for teaching specific concepts in inclusive upper early grade classrooms using low-cost materials. • Develop learning materials for teaching specific concepts in inclusive upper early grade classrooms using low or no cost resources.			• Creativity and innovation: developing TLMs using models • Integration of ICT by utilising short videos from YouTube and other online resources. • Collaboration and communication through group presentations. • Gender, equity through fair distribution of teaching and learning opportunities in and out	

	materials for teaching specific concepts in inclusive upper early grade classrooms using low or no cost resources.			of classroom, inclusivity, and diversity through acknowledgment of individual differences in the classroom. • Reflection and critical thinking for self-awareness through multi and varied interactive strategies that would support learners with diverse characteristics.
Topic Title: Models and material adaptation for inclusive early grade school settings	**Sub-topic**	**Stage/time**	**Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.**	
			Teacher Activity	**Student Activity**
	Models and material development	**45 minutes** **45 minutes** **90 minutes**	**Face-to-face:** Use questioning and shower thought to review student teachers' relevant previous knowledge on the lesson (PD Theme 2; pp. 5-14; PD Theme 3; pp. 75-82). Use questioning and whole class discussion on the types of models (solid, cross section, construction and working models, diorama and puppets) (PD Theme 2; pp. 5-14; PD Theme 3; pp. 75-82). **E-learningOpportunity and Independent Study:** Use short videos, animations and simulations from YouTube and other online resources designed on power point showing ways of developing types of models for learning in upper early grade classrooms using low or no cost resources, after which comments and discussions are made (PD Theme 5; pp. 29-60). **Practical Work and Project:** Guide studentteachers to work in small groups to design learning materials using low or no cost resources based on the types of models (solid, cross section, construction and working models, diorama and puppets) to teach concepts in their subject area Let student teachers submit their group project work within the week. 9PD Theme 3; pp. 65-72; PD Theme 4; pp. 69-98).	**Face-to-face** Student teachers share their understanding of their relevant previous knowledge and experiences. Student teachers share their views and experiences on types of models (solid, cross section, construction and working models, diorama and puppets) used for designing materials for teaching specific concepts in inclusive upper early grade classrooms. **E-learning Opportunity and Independent Study:** Student teachers watch short videos, animations and simulations from YouTube and other online resources designed on power point showing ways of developing types of models for learning in upper early grade classrooms using low or no cost resources after which discussions are made. **Practical Work and Project:** Undertake a project by designing learning materials using low or no cost resources based on the types of models (solid, cross section, construction and working models, diorama and puppets) in a particular subject area. Submit their project work for assessment in a week.

Lesson assessments – evaluation of learning: of, for and as learning within the lesson	**Formative Assessment:** Assessment of student teachers' group practical and project work on using low or no cost resources for designed learning materials and models to teach concepts in their specialisms. **Assessment weight: 30 %**
Instructional Resources	• TESSA (2016). *Inclusive education tool kit*. Walton Hall: United Kingdom • Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org) • Transforming Teacher Education and Learning (2016). *Group work: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • Transforming Teacher Education and Learning (2016). *Talk for learning: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • Transforming Teacher Education and Learning (2016). *Questioning: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • YouTube
Required Text (core)	Adeoye, B. F. (2015). *Technology guide for teaching & learning.* Ibadan-Nigeria: His Lineage Publishing House. Amoah, S. A., Laryea, P., & Amoako, B. M. (2016). *Fundamentals of educational technology for effective teaching and learning.* Winneba: UEW Press. Gagne, R. M. & Briggs, L. J. (1979). Principles of instructional design (2nd ed.). New York: Holt, Rinehalt, & Winston. Sarfo, F. K. (2008). Educational technology. Kumasi: Wilas Press Ltd. Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org).
Additional Reading List	Driscoll, M.P. (2005). *Psychology of learning for instruction*. Boston: Pearson Education Inc. Rowntree, D. (1982). *Educational technology in curriculum development*. London: Harper and Row. Smaldino, S.E., Lowther, D.L., & Russell, D.J. (2008). *Instructional technology and media for learning* (9th ed.). Upper saddle River, NJ: Engle Cliff Woods
CPD needs	Workshop on use of low-cost materials in developing various models for teaching concepts in their specialisms

LESSON 9

Year of B.Ed.	2	Semester	2	Place of lesson in semester	1 2 3 4 5 6 7 8 **9** 10 11 12

Title of Lesson	**Models and Material Adaptation for Inclusive Classrooms and their Uses II**					**Lesson Duration**	**3 Hours**
Lesson description	This lesson seeks to introduce student teachers to the criteria for selecting materials for teaching in inclusive upper early grade classrooms with learners from diverse background. The lesson also aims at exposing student teachers to the factors for selecting materials during instructional activities in inclusive upper early grade classrooms with learners from diverse background.						
Previous student teacher knowledge, prior learning (assumed)	Student teachers have been introduced to the types of models and how to develop learning materials using low and no cost resources. Student teachers have also observed some teachers using different materials for teaching during STS.						
Possible barriers to learning in the lesson	Inadequate ICT tools and poor internet connectivity to watch short videos on selecting materials for teaching in inclusive upper early grade classrooms with learners from diverse background.						
Lesson Delivery – chosen to support students in achieving the outcomes	**Face-to-face [√]**	**Practical Activity [√]**	**Work-Based Leaning**	**Seminars [ ]**	**Independent Study [√]**	**E-learning opportunities [√]**	**Practicum**
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	**Face-to-face:** Questioning and shower thoughts. **E-learning opportunity and Independent study:** Watching short videos, animations and simulations from YouTube and other online resources designed on power point showing ways of developing types of models for learning **Practical Work and Project:** Use jigsaw with cross grouping to enable student teachers to work in groups to design learning materials using low or no cost resources based on the types of models.						
• **Overarching outcome, what you want the students to achieve, serves as basis for the learning outcomes. An expanded version of the description.** • **Write in full aspects of the NTS addressed**	Student teachers would be expected to explain the criteria for selecting materials to teach in inclusive upper early grade classrooms. Student teachers would also be expected to explain the factors responsible for ineffective materials used in instructional activities in inclusive upper early grade classrooms. It is also expected that core and transferable skills including gender, equity, diversity, collaboration, team work, communication, reflective practice and critical thinking would be developed among student teachers at the end of the lesson. **(NTS 1a, 2c, 3c, 3d, 3e, 3f, 3g, 3m, 3p).**						
• **Learning Outcome for the lesson, picked and developed from the course specification** • **Learning indicators for each learning outcome**	**Learning Outcomes**		**Learning Indicators**		**Identify which cross cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?**		
	Student teachers would be expected to explain the criteria for selecting materials to teach in inclusive upper early grade classrooms. Student teachers would also be expected to explain the factors responsible for ineffective materials used in instructional activities in inclusive upper early grade classrooms. **(NTS 1a, 2c, 3c, 3d, 3e, 3f, 3g, 3m, 3p).**		• Explain the criteria for selecting teaching and learning resources to be used during STS • Examine the factors responsible for the ineffective materials used to facilitate learning in the early grade school.		• Integration of ICT by utilising short videos from YouTube and other online resources. • Collaboration and communication through group presentations. • Gender, equity through fair distribution of teaching and learning opportunities in and out of classroom, inclusivity, and diversity through acknowledgment of individual differences in the classroom. • Reflection and critical thinking for self-awareness through multi and varied interactive strategies that would support learners with diverse characteristics.	

<table>
<tr><td rowspan="3">Topic Title: Models and Material Adaptation for Inclusive Classrooms and their Uses II</td><td rowspan="2">Sub-topic</td><td rowspan="2">Stage/time</td><td colspan="2">Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.</td></tr>
<tr><td>Teacher Activity</td><td>Student Activity</td></tr>
<tr><td>Criteria for selecting materials; factors behind ineffective materials; and Adaptive and Assistive Technologies (AATs) for SEN</td><td>30 minutes

80minutes

90 minutes</td><td>Face-to-face:
Use questioning and shower thought to review student teachers' relevant previous knowledge on the lesson (PD Theme 2; pp. 5-14; PD Theme 3; pp. 75-82).

Face-to-face
Guide student teachers to explore and discuss he criteria for selecting materialsusing talk for learning approaches (PD Theme 2; pp. 5-14; PD Theme 3; pp. 75-82).

Independent study & group work
Put student teachers into pairs for them to pair and share factors contributing to the ineffective use of materials.
Guide them to present findings</td><td>Face-to-face
Student teachers share their understanding of their relevant previous knowledge and experiences.

Face-to-face
Provide relevant responses to questions posed by teachers.

Independent study & group work
Work in pairs and do presentation</td></tr>
<tr><td>Lesson assessments – evaluation of learning: of, for and as learning within the lesson</td><td colspan="4">In-lesson Assessment
Peers listen and assess colleagues during presentations</td></tr>
<tr><td>Instructional Resources</td><td colspan="4">• TESSA (2016). Inclusive education tool kit. Walton Hall: United Kingdom
• Transforming Teacher Education and Learning (2016). Teaching and learning materials: Professional development guide for tutors. Accra. Ministry of Education (www.t-tel.org)
• Transforming Teacher Education and Learning (2016). Group work: Professional development guide for tutors. Accra. Ministry of Education (www.t-tel.org).
• Transforming Teacher Education and Learning (2016). Talk for learning: Professional development guide for tutors. Accra. Ministry of Education (www.t-tel.org).
• Transforming Teacher Education and Learning (2016). Teaching and learning materials: Professional development guide for tutors. Accra. Ministry of Education (www.t-tel.org).
• Transforming Teacher Education and Learning (2016). Questioning: Professional development guide for tutors. Accra. Ministry of Education (www.t-tel.org).
• YouTube</td></tr>
<tr><td>Required Text (core)</td><td colspan="4">Adeoye, B. F. (2015). Technology guide for teaching & learning. Ibadan-Nigeria: His Lineage Publishing House.
Amoah, S. A., Laryea, P., & Amoako, B. M. (2016). Fundamentals of educational technology for effective teaching and learning. Winneba: UEW Press.
Gagne, R. M. & Briggs, L. J. (1979). Principles of instructional design (2nd ed.). New York: Holt, Rinehalt, & Winston.
Sarfo, F. K. (2008). Educational technology. Kumasi: Wilas Press Ltd.
Transforming Teacher Education and Learning (2016). Teaching and learning materials: Professional development guide for tutors. Accra. Ministry of Education (www.t-tel.org).</td></tr>
<tr><td>Additional Reading List</td><td colspan="4">Driscoll, M.P. (2005). Psychology of learning for instruction. Boston: Pearson Education Inc.
Rowntree, D. (1982). Educational technology in curriculum development. London: Harper and Row.
Smaldino, S.E., Lowther, D.L., & Russell, D.J. (2008). Instructional technology and media for learning (9th ed.). Upper saddle River, NJ: Engle Cliff Woods</td></tr>
<tr><td>CPD needs</td><td colspan="4">Workshops on the use of digital literacy (audio-visual and tactile analysis), PD Theme 2; PD Theme 3; PD Theme 4; PD Theme 5.</td></tr>
</table>

LESSON 10

Year of B.Ed.	2	Semester	2	Place of lesson in semester	1 2 3 4 5 6 7 8 9 **10** 11 12

Title of Lesson	**Models and Material Adaptation for Inclusive Classrooms and their Uses III**					**Lesson Duration**	3 Hours
Lesson description	This lesson which should be based on co-teaching with SEN experts, aims at exposing student teachers to the meaning and types of Adaptive and Assistive Technologies (AATs) for inclusive upper early grade classrooms. The lesson also seeks to introduce student teachers to the designing and appropriate use of Adaptive and Assistive Technologies (AATs) for inclusive upper early grade classrooms.						
Previous student teacher knowledge, prior learning (assumed)	Student teachers have been introduced to the criteria for selecting materials to teach in inclusive upper early grade classrooms, and factors behind ineffective materials in teaching upper early grade learners in inclusive classrooms. Student teachers have observed the materials selected by teachers for teaching upper early grade classrooms during STS. They have also observed the types of materials their tutors bring to the lecture room during lectures.						
Possible barriers to learning in the lesson	Inadequate ICT tools and poor internet connectivity to watch short videos on the types of Adaptive and Assistive Technologies (AATs) and how they are used for SEN in inclusive upper early grade classrooms with learners from diverse backgrounds.						
Lesson Delivery – chosen to support students in achieving the outcomes	**Face-to-face [√]**	**Practical Activity [√]**	**Work-Based Leaning**	**Seminars [ ]**	**Independent Study [√]**	**E-learning opportunities [√]**	**Practicum [√]**
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	**Face-to-face:** Questioning, tutor led discussion, and shower thoughts. **Independent Study:** Mixed gender and mixed attainment small groups to enable student teachers discuss the relevance of using Adaptive and Assistive Technologies (AATs) for SEN. **E-learning opportunity:** Watching short videos, animations and simulations from YouTube and other online resources on how types of Adaptive and Assistive Technologies (AATs) for SEN are used. **Practical Work and Practicum:** jigsaw with cross grouping to enable student teachers to role play the appropriate use of the types of Adaptive and Assistive Technologies (AATs) for SEN.						
• **Overarching outcome, what you want the students to achieve, serves as basis for the learning outcomes. An expanded version of the description.** • **Write in full aspects of the NTS addressed**	Student teachers would be expected to explain Adaptive and Assistive Technologies (AATs), and identify the types of Adaptive and Assistive Technologies (AATs) for SEN. More so, student teachers would be expected to explain the relevance of using Adaptive and Assistive Technologies (AATs) for SEN in inclusive upper early grade classrooms. It is also expected that by the end of the lesson student teachers would be able to demonstrate how Adaptive and Assistive Technologies (AATs) are used appropriately in inclusive upper early grade classrooms, especially during STS. It is also the expectation that core and transferable skills including gender, equity, diversity, collaboration, team work, communication, reflective practice and critical thinking would be developed among student teachers at the end of the lesson. **(NTS 1a, 2c, 3c, 3d, 3e, 3f, 3g, 3m, 3p).**						
• **Learning Outcome for the lesson, picked and developed from the course specification** • **Learning indicators for each learning outcome**	**Learning Outcomes**		**Learning Indicators**			**Identify which cross cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?**	
	Demonstrate knowledge and understanding of the meaning and types of Adaptive and Assistive Technologies (AATs) for SEN in inclusive upper early grade classrooms. Demonstrate knowledge and understanding of the relevance of using Adaptive and Assistive Technologies (AATs) for SEN in inclusive		• Explain the meaning of Adaptive and Assistive Technologies (AATs) and identify the types for SEN in inclusive upper early grade classrooms. • Explain the relevance of using Adaptive and Assistive Technologies (AATs) for SEN in inclusive upper early grade classrooms			• Integration of ICT by utilising short videos from YouTube and other online resources. • Collaboration and communication through group presentations. • Gender, equity through fair distribution of teaching and learning opportunities in and out of classroom, inclusivity, and diversity through	

	upper early grade classrooms. Demonstrate the appropriate use of Adaptive and Assistive Technologies (AATs) for SEN in inclusive upper early grade classrooms.		• Show through role play, the use of appropriate Adaptive and Assistive Technologies (AATs) for SEN in inclusive upper early grade classrooms.	acknowledgment of individual differences in the classroom. • Reflection and critical thinking for self-awareness through multi and varied interactive strategies that would support learners with diverse characteristics.
Topic Title: Models and Material Adaptation for Inclusive Classrooms and their Uses III	**Sub-topic**	**Stage/time**	**Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.**	
			Teacher Activity	**Student Activity**
	Adaptive and Assistive Technologies (AATs) for SEN	**45 minutes** **30 minutes** **45 minutes** **60 minutes**	**Face-to-face (Co-teaching with SEN experts):** Use questioning and shower thought to review student teachers' relevant previous knowledge and introduce the lesson. Use questioning and whole class discussion to assist student teachers to understand the meaning and types of Adaptive and Assistive Technologies (AATs) for SEN (PD Theme 2; pp. 5-14; PD Theme 3; pp. 75-82). **Independent Study (Co-teaching with SEN experts):** Use mixed gender and mixed attainment small groups to enable student teachers discuss the relevance of using Adaptive and Assistive Technologies (AATs) for SEN in inclusive upper early grade classrooms after which they disseminate their findings through poster presentation (PD Theme 4; pp. 27-44). **E-learning Opportunity and Independent Study (Co-teaching with SEN experts):** Use short videos, animations and simulations from YouTube and other online resources on how types of Adaptive and Assistive Technologies (AATs) for SEN are used (PD Theme 5; pp. 29-60). **Practical Work and Practicum (Co-teaching with SEN experts):** Use jigsaw with cross grouping	**Face-to-face (Co-teaching with SEN experts):** Student teachers share their understanding of their relevant previous knowledge and experiences in the introduction of the lesson. Student teachers answer questions by sharing their understanding of the meaning and types of Adaptive and Assistive Technologies (AATs) for SEN. **Independent Study (Co-teaching with SEN experts** Student teachers, through mixed gender and mixed attainment small groups, discuss the importance of using Adaptive and Assistive Technologies (AATs) for SEN in inclusive upper early grade classrooms panel or pyramid discussion. Student teachers present their group work through poster presentation. **E-learning Opportunity and Independent Study (Co-teaching with SEN experts):** Student teachers watch short videos, animations and simulations from YouTube and other online resources on how types of Adaptive and Assistive Technologies (AATs) for SEN are used after which discussions are made. **Practical Work and Practicum (Co-teaching with SEN experts):** In jigsaw with cross grouping, student teachers

			to enable student teachers to role play the appropriate use of the types of Adaptive and Assistive Technologies (AATs) for SEN in inclusive upper early grade classrooms, after which comments are given for discussion (PD Theme 3; pp. 65-72; PD Theme 4; pp. 69-98).	demonstratethe appropriate use of the types of Adaptive and Assistive Technologies (AATs) for SEN in inclusive upper early grade classrooms. Comments are given for discussion afterwards.
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	**In-lesson Assessment:** Student teachers demonstrate use of different adaptive and assistive technologies for peers to assess.			
Instructional Resources	• TESSA (2016). *Inclusive education tool kit*. Walton Hall: United Kingdom • Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org) • Transforming Teacher Education and Learning (2016). *Group work: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • Transforming Teacher Education and Learning (2016). *Talk for learning: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • Transforming Teacher Education and Learning (2016). *Questioning: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • YouTube			
Required Text (core)	Adeoye, B. F. (2015). *Technology guide for teaching & learning.* Ibadan-Nigeria: His Lineage Publishing House. Amoah, S. A., Laryea, P., & Amoako, B. M. (2016). *Fundamentals of educational technology for effective teaching and learning.* Winneba: UEW Press. Gagne, R. M. & Briggs, L. J. (1979). Principles of instructional design (2nd ed.). New York: Holt, Rinehalt, & Winston. Sarfo, F. K. (2008). Educational technology. Kumasi: Wilas Press Ltd. Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org).			
Additional Reading List	Driscoll, M.P. (2005). *Psychology of learning for instruction*. Boston: Pearson Education Inc. Rowntree, D. (1982). *Educational technology in curriculum development*. London: Harper and Row. Smaldino, S.E., Lowther, D.L., & Russell, D.J. (2008). *Instructional technology and media for learning* (9th ed.). Upper saddle River, NJ: Engle Cliff Woods			
CPD needs	Workshops on the use of digital literacy (audio-visual and tactile analysis), PD Theme 1; PD Theme 2; PD Theme 3; PD Theme 4; PD Theme 5.			

LESSON 11

Year of B.Ed.	2	Semester	2	Place of lesson in semester	1 2 3 4 5 6 7 8 9 10 **11** 12

Title of Lesson	**Handheld Technologies (Mobile and Wireless Learning)**					**Lesson Duration**	**3 Hours**
Lesson description	This lesson seeks to introduce student teachers to the concept and properties of handheld technology. Specifically, the lesson aims at exposing student teachers to relevance and the use of computers and mobile devices in creating communication, and teaching and learning applications.						
Previous student teacher knowledge, prior learning (assumed)	Student teachers have been introduced to criteria for selecting materials for instruction in inclusive upper early grade classrooms, and the factors that account for ineffective use of materials in inclusive upper early grade classrooms. Student teachers have also been exposed to the types of Adaptive and Assistive Technologies (AATs) for SEN. Moreover, student teachers have observed their tutors and other instructors use computers and mobile devices for classroom activities to enhance learning. Student teachers have also been using their mobile phones and laptops to search for information from the internet, take pictures and record activities.						
Possible barriers to learning in the lesson	Inadequate ICT tools and poor internet connectivity.						
Lesson Delivery – chosen to support students in achieving the outcomes	**Face-to-face [√]**	**Practical Activity [√]**	**Work-Based Leaning**	**Seminars [√]**	**Independent Study [√]**	**E-learning opportunities [√]**	**Practicum**
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	**Face-to-face:** Questioning and shower thoughts. **E-learning opportunity and Independent study:** Watching short videos, animations and simulations from YouTube and other online resources designed on power point showing ways of developing types of models for learning **Practical Work and Project:** Use jigsaw with cross grouping to enable student teachers to work in groups to design learning materials using low or no cost resources based on the types of models.						
• **Overarching outcome, what you want the students to achieve, serves as basis for the learning outcomes. An expanded version of the description.** • **Write in full aspects of the NTS addressed**	Student teachers would be able to explain the concept, properties and relevance of handheld technology. Student teachers would be expected to discuss the relevance of computers and mobile devices in creating communication, and teaching and learning applications for inclusive upper early grade classrooms. Again, it is expected that student teacher would be able to exhibit the appropriate skills in using computers and mobile devices in creating communication, and teaching and learning applications for inclusive upper early grade classrooms, especially during STS. It is expected that core and transferable skills including gender, equity, diversity, collaboration, team work, communication, reflective practice and critical thinking would be developed among student teachers at the end of the lesson **(NTS 1a, 2c, 3c, 3d, 3e, 3f, 3g, 3m, 3p).**						
• **Learning Outcome for the lesson, picked and developed from the course specification** • **Learning indicators for each learning outcome**	**Learning Outcomes**		**Learning Indicators**			**Identify which cross cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?**	
	Demonstrate knowledge and understanding of the concept of handheld technology and properties. Demonstrate knowledge and understanding of the relevance of handheld technology such as computers and mobile devices in creating communication, and teaching and learning		• Discuss the meaning and properties of handheld technology • Discuss the relevance of handheld technology such as computers and mobile devices in creating communication, and teaching and learning applications in inclusive upper early grade classrooms.			• Integration of ICT by utilising short videos from YouTube and other online resources. • Collaboration and communication through group presentations. • Gender, equity through fair distribution of teaching and learning opportunities in and out of classroom, inclusivity, and diversity through	

<table>
<tr><td></td><td colspan="2">applications in inclusive upper early grade classrooms.

Demonstrate the skills in using handheld technology such as computers and mobile devices in creating communication, and teaching and learning applications in inclusive upper early grade classrooms.</td><td>• Exhibit the skills in using handheld technology such as computers and mobile devices in creating communication, and teaching and learning applications in inclusive upper early grade classrooms.</td><td>acknowledgment of individual differences in the classroom.
• Reflection and critical thinking for self-awareness through multi and varied interactive strategies that would support learners with diverse characteristics.</td></tr>
<tr><td rowspan="3">Topic Title: Handheld Technologies (Mobile and Wireless Learning)</td><td>Sub-topic</td><td>Stage/time</td><td colspan="2">Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.</td></tr>
<tr><td></td><td></td><td>Teacher Activity</td><td>Student Activity</td></tr>
<tr><td>The meaning, properties, relevance and use of handheld technology in creating communication, and teaching and learning applications.</td><td>45 minutes

45 minutes

90 minutes</td><td>Face-to-face:
Use questioning to review student teachers' relevant previous knowledge to introduce the lesson (PD Theme 2; pp. 5-14).

Independent Study and Seminar:
Use pyramid discussion technique to enable student teachers discuss relevance of handheld technology such as computers and mobile devices in creating communication, and teaching and learning applications in inclusive upper early grade classrooms (PD Theme 4; pp. 27-30).

Practical Work and Project:
Use jigsaw with cross grouping to enable student teachers to work in groups to use handheld technology (computers and mobile devices) to create communication, and teaching and learning applications suitable for inclusive upper early grade classrooms, and submit their group project work. (PD Theme 4; pp. 69-98; PD Theme 5; pp. 29-60)).</td><td>Face-to-face:
Student teachers respond to questions and share their views to contribute to the introduction of the lesson.

Independent Study and Seminar:
Through pyramid discussion, student teachers discuss the relevance of handheld technology such as computers and mobile devices in creating communication, and teaching and learning applications in inclusive upper early grade classrooms.
Student teachers then present their findings for comments and discussion.
Practical Work and Project
In jigsaw with cross grouping, student teachers undertake a project by creating communication, and teaching and learning applications suitable for inclusive upper early grade classrooms.
Student teachers submit their project work for assessment</td></tr>
<tr><td>Lesson assessments – evaluation of learning: of, for and as learning within the lesson</td><td colspan="4">In-lesson Assessment:
Project Work: Using mobile devices to create communication, and teaching and learning applications in inclusive upper early grade classrooms= 20%</td></tr>
<tr><td>Instructional Resources</td><td colspan="4">• TESSA (2016). Inclusive education tool kit. Walton Hall: United Kingdom
• Transforming Teacher Education and Learning (2016). Teaching and learning materials: Professional development guide for tutors. Accra. Ministry of Education (www.t-tel.org)</td></tr>
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	• Transforming Teacher Education and Learning (2016). *Group work: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • Transforming Teacher Education and Learning (2016). *Talk for learning: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • Transforming Teacher Education and Learning (2016). *Questioning: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • YouTube
Required Text (core)	Adeoye, B. F. (2015). *Technology guide for teaching & learning.* Ibadan-Nigeria: His Lineage Publishing House. Amoah, S. A., Laryea, P., & Amoako, B. M. (2016). *Fundamentals of educational technology for effective teaching and learning.* Winneba: UEW Press. Gagne, R. M. & Briggs, L. J. (1979). Principles of instructional design (2nd ed.). New York: Holt, Rinehalt, & Winston. Sarfo, F. K. (2008). Educational technology. Kumasi: Wilas Press Ltd. Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org).
Additional Reading List	Driscoll, M.P. (2005). *Psychology of learning for instruction*. Boston: Pearson Education Inc. Rowntree, D. (1982). *Educational technology in curriculum development*. London: Harper and Row. Smaldino, S.E., Lowther, D.L., & Russell, D.J. (2008). *Instructional technology and media for learning* (9th ed.). Upper saddle River, NJ: Engle Cliff Woods
CPD needs	Workshops on the use of digital literacy (audio-visual and tactile analysis), PD Theme 2; PD Theme 3; PD Theme 4; PD Theme 5.

LESSON 12

Year of B.Ed.	2	Semester	2	Place of lesson in semester	1 2 3 4 5 6 7 8 9 10 11 12

Title of Lesson	**Storage and Evaluation/Audit of Multimedia Resources**					**Lesson Duration**	**3 Hours**
Lesson description	This lesson, should be based on co-teaching with SEN experts, seeks to introduce student teachers to the type of learning resources and the need for storing them. The lesson also aims at exposing student teachers to the conduct of SEN/gender evaluation and audit of learning resources using checklist. Again, the lesson seeks to introduce student teachers to the appropriate ways of storing the various types of resources.						
Previous student teacher knowledge, prior learning (assumed)	Student teachers have been introduced to the criteria for selecting materials to teach in inclusive upper early grade classrooms, and factors behind ineffective materials in teaching upper early grade learners in inclusive classrooms. Also, student teachers have been exposed to Adaptive and Assistive Technologies (AATs) for SEN, and their relevance in inclusive upper early grade classrooms, and could demonstrate the use of these AATs for SEN.						
Possible barriers to learning in the lesson	Inadequate or lack of storage facilities.						
Lesson Delivery – chosen to support students in achieving the outcomes	**Face-to-face [√]**	**Practical Activity [√]**	**Work-Based Leaning**	**Seminars [√]**	**Independent Study [√]**	**E-learning opportunities [√]**	**Practicum**
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	**Face-to-face:** Questioning and tutor-led discussion. **Independent Study and Seminar:** Mixed gender and mixed attainment group activities and group presentation. **E-learning opportunity and Independent study:** Watching short videos, animations and simulations from YouTube and other online resources on the appropriate ways of storing various types of learning resources to consolidate the knowledge and understanding of student teachers						
• **Overarching outcome, what you want the students to achieve, serves as basis for the learning outcomes. An expanded version of the description.** • **Write in full aspects of the NTS addressed**	Student teachers would be able to identify and explain the type of resources and the need for their appropriate storage. It is expected that student teachers would be able to conduct SEN and gender audit or evaluation of learning resources using checklist. Furthermore, student teachers would be expected to demonstrate the appropriate ways of storing the various types of resources. With this knowledge and experience, student teachers would be able to identify appropriate learning resources to be used in inclusive upper early grade classrooms during STS, and use appropriate ways of storing them after their use. It is expected that core and transferable skills including gender, equity, diversity, collaboration, team work, communication, reflective practice and critical thinking would be developed among student teachers at the end of the lesson **(NTS 1a, 2c, 3c, 3d, 3e, 3f, 3g, 3m, 3p).**						
• **Learning Outcome for the lesson, picked and developed from the course specification** • **Learning indicators for each learning outcome**	**Learning Outcomes**		**Learning Indicators**		**Identify which cross cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?**		
	Demonstrate knowledge and understanding of the types of learning resources suitable for instructional activities in inclusive upper early grade classrooms, and the need for their appropriate storage. Demonstrate knowledge and understanding of the appropriate ways of storing various types of learning resources used in inclusive upper early grade classrooms		• Explain the types of learning resources suitable for inclusive upper early grade classrooms, and discuss the need for their appropriate storage. • Discuss the appropriate ways of storing the types of learning resources suitable for inclusive upper early grade classrooms. • Discuss the appropriate ways of conducting SEN and gender evaluation/audit of		• Integration of ICT by utilising short videos from YouTube and other online resources. • Collaboration and communication through group presentations. • Gender, equity through fair distribution of teaching and learning opportunities in and out of classroom, inclusivity, and diversity through acknowledgment of individual differences in the classroom.	

	Demonstrate knowledge and understanding of the appropriate ways of conducting SEN and gender evaluation/ audit of learning resources for inclusive upper early grade classrooms, using checklist.		learning resources for inclusive upper early grade classrooms, using checklist	• Reflection and critical thinking for self-awareness through multi and varied interactive strategies that would support learners with diverse characteristics.
Topic Title: Handheld Technologies (Mobile and Wireless Learning)	**Sub-topic**	**Stage/time**	**Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.**	
			Teacher Activity	**Student Activity**
	The meaning, properties, relevance and use of handheld technology in creating communication, and teaching and learning applications.	**40 minutes** **40 minutes** **30 minutes** **30 minutes**	**Face-to-face:** Use questioning to review student teachers' relevant previous knowledge to discuss the types of learning resources suitable for instructional activities in inclusive upper early grade classrooms (PD Theme 2; pp. 5-14). Use questioning and tutor-led discussion to elicit views of student teachers on the need for appropriate storage of learning resources suitable for inclusive upper early grade classrooms (PD Theme 2; pp. 5-14; PD Theme 3; pp. 75-82, theme 5). **Independent Study and Seminar:** Use mixed gender and mixed attainment small groups to enable student teachers discuss the appropriate ways of storing various types of learning resources suitable for inclusive upper early grade classrooms(PD Theme 4; pp. 27-44). **E-learning Opportunity and Independent Study:** Showshort videos, animations and simulations from YouTube and other online resources on the appropriate ways of storing various types of learning resources to consolidate the knowledge and understanding of student teachers (PD Theme 5; pp. 29-60).	**Face-to-face** Student teachers respond to questions and share their views to contribute to the discussion on the types of learning resources suitable for instructional activities in inclusive upper early grade classrooms. Through tutor-led discussion, student teachers share their knowledge and understanding of the need for appropriate storage of learning resources suitable for inclusive upper early grade classrooms. **Independent Study and Seminar:** In mixed gender and mixed attainment groups, student teachers discuss the appropriate ways of storing various types of learning resources suitable for inclusive upper early grade classrooms. Student teachers present their group work using power point. **E-learning Opportunity and Independent Study:** Student teachers watch short videos, animations and simulations from YouTube and other online resources on the appropriate ways of storing various types of learning resources to deepen their understanding of appropriate ways of storing learning resources. Comments, clarifications and tactile analysis are made after watching the short videos.

			Face-to-face: Use questioning and tutor-led discussion to enable student teachers discuss the criteria for evaluating resource suitable for learners with diverse needs(PD Theme 2; pp. 5-14; PD Theme 3; pp. 75-82).	**Face-to-face** Through tutor-led discussion and questioning, student teachers discuss the criteria for evaluating resource suitable for learners with diverse needs in upper early grade classrooms.
	Review and summary of course	**40 minutes**	**Face-to-face** Use talk for learning approaches to guide student teachers in reviewing the course taking note of key issues. Guide student teachers address misconceptions and misunderstanding of concepts in the course.	**Face-to-face** Respond to questions and ask relevant questions related to misconceptions and misunderstanding of concepts.
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	**In-lesson Assessment:** **Group Work Presentation:** Using power point to present ways of storing various types of learning resources suitable for inclusive upper early grade classrooms			
Instructional Resources	• TESSA (2016). *Inclusive education tool kit*. Walton Hall: United Kingdom • Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org) • Transforming Teacher Education and Learning (2016). *Group work: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • Transforming Teacher Education and Learning (2016). *Talk for learning: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • Transforming Teacher Education and Learning (2016). *Teaching and learning materials: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • Transforming Teacher Education and Learning (2016). *Questioning: Professional development guide for tutors*. Accra. Ministry of Education (www.t-tel.org). • YouTube			
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CPD needs	Workshops on the use of digital literacy (audio-visual and tactile analysis), PD Theme 2; PD Theme 3; PD Theme 4; PD Theme 5.			
	[3]**Component 1: Subject Portfolio Assessment (30% overall score)** • Selected items of students work (3 of them -10% each) = 30% • Midterm assessment = 20% • Reflective Journal = 40% • Organisation of the subject portfolio = 10% (how it is presented /organised) [4]**Component 2: Subject Project: (30% overall semester score)**			

[3]**See rubrics on Subject Portfolio Assessment in Annex 6 of NTEAP**
[4]**See rubrics on Subject Project Assessment in Annex 6 of NTEAP**

	• Introduction, a clear statement of aim and purpose of the project = 10% • Methodology: what the student teacher has done and why to achieve the purpose of the project = 20% • Substantive or main section = 40% • Conclusion = 30% **Component 3**: **End of Semester Exams 40%**