

VIA AFRIKA DIGITAL EDUCATION ACADEMY

Digital learning in schools

SESSION 1

Why eLearning?

CLASS NOTES



SACE provider number: **PR0000008139**
Via Afrika is a B-BBEE **Level 1** Provider.



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

In partnership with the Department of Basic Education.



Our Teachers. Our Future.

Course content

Digital learning in schools

Session 1: Why eLearning?

Session 2: Getting technical

Session 3: Managing and using ICTs in schools

Session 4: Content and apps for teaching

Session 5: Online assessment tools

Session 6: Games and gamification in education

Digital learning in schools

Session 1: Why eLearning?

Class Notes



Our Teachers. Our Future.

© Via Afrika 2023

No part of this course may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the publisher.

Important information

1. You can download and print the Class Notes for personal use, but you may not share them.
2. Once you have watched all the videos and completed all the quizzes, reflections, tasks and assessments successfully, you can download your certificate and print it.
3. If you wish to earn SACE Professional Development (PD) points for this session, you must complete all the online assessments in the session successfully. Our system will notify us of your success, and we will send the points allocation request to SACE.
4. Please remember that devices and apps are updated all the time, so the device specifications, app features and icons that you see here might differ slightly depending on the device you're using and any subsequent app updates.

Abbreviations and terms

Bloom's Revised Taxonomy: A pedagogical framework for eLearning. [See pedagogy, See eLearning]

eLearning: Learning that is supported by, enhanced by, or facilitated through Information Communication Technologies (ICTs), and that is supported by reconsiderations of content, and a relevant pedagogy. [see ICT]

ICT: Information and communication technologies.

PD Points: Professional Development Points [See SACE]

Pedagogy: The how and why of what we do in the classroom. The method and practice of teaching, especially as an academic subject or theoretical concept.

PedTech: Pedagogical Technology for what happens when we want to use technology in the classroom

RAT: Replace, Amplify, Transform. A pedagogical framework for eLearning. [See pedagogy, See eLearning]

SACE: South African Council for Educators. Awards Continuous Professional Development Points (CPDP) to teachers.

SAMR: Substitution, Augmentation, Modification, Redefinition. A pedagogical framework for eLearning. [See pedagogy, See eLearning]

TPACK: Technological, Pedagogical and Content Knowledge. A pedagogical framework for eLearning. [See pedagogy, See eLearning]

Contents

Outcomes and content	vi
Overview	1
Why is eLearning important?	2
More about eLearning	2
21st Century Skills	5
Digital fluency and other skills	7
Teachers and eLearning	10
Pedagogy and eLearning	13
Isn't teaching just the same with technology?.....	13
TPACK: Technological Pedagogical Content Knowledge.....	14
SAMR: Substitution, Augmentation, Modification, Redefinition	18
Blended learning	23
What is blended learning?	23
Criticisms of flipped classrooms	25
A new flipped classroom: Fail-Flip-Fix-Feed Model.....	26
Considerations for blended learning	28
About the Final Assessment	30
Final Assessment	31
Additional Resources	34
Acknowledgements	35

Outcomes and content

Outcomes of the session

By the end of the session, the participant will be able to:

- have an understanding of what eLearning is, and why it is important for 21st Century Learners
- have an understanding of what learners in the 21st Century are like, and what their educational needs are
- have an understanding of what teachers in the 21st Century need to be like, and what their learners' educational needs are
- have an understanding of the need for theoretical underpinnings in eLearning
- understand and be able to apply three theories of eLearning: TPACK, SAMR, and RAT
- understand and be able to implement blended learning

Content of the session

This session will focus on:

- defining eLearning
- learners in the 21st Century
- teachers in the 21st Century
- understanding the theory behind eLearning and how to put it into practice (blended learning, TPACK, SAMR and RAT)
- blended learning

Overview

Welcome to **Why eLearning?**, the first session in Vadea's **Digital learning in schools Course**. The aim of this session is to give you a greater understanding of what eLearning is. We will cover four key issues in this session.

1. Why we should be doing eLearning, and the concerns that people have raised about it.
2. The theory behind teaching with and through technology, as set out in the TPACK model.
3. What technology can and cannot do in a classroom by examining two more models, SAMR and RAT.
4. Blended learning as an example of how technology can assist in making teaching and learning more effective.

There are regular tasks and quizzes just to check that you are developing the knowledge needed to move on.

Why is eLearning important?

You may have noticed a greater interest in eLearning in recent years, and in particular since the 2020–2021 Covid pandemic. Various groups, institutions and the education departments have been discussing ways to implement eLearning in schools and other learning institutions.

Although much of it is positive, there are some concerns and even misunderstandings about eLearning.

Before we start talking about eLearning, think about these questions.

- What do you understand by eLearning?
- Do you think eLearning is useful?
- Do you have any concerns about eLearning?

More about eLearning

eLearning demands a rethink of the way we do education. It can be defined as learning that is supported by, enhanced by, or facilitated through Information Communication Technologies (ICTs), and that is supported by reconsiderations of content, and a relevant pedagogy.

The following are some reasons why eLearning is important.

Learners are different today

It is found that people who grow up during particular time periods tend to have similar thinking and responses to things. For this reason, it is useful to group people according to when they were born and give names to these generations. Of particular importance to us are generations Z, Alpha and Beta. These are all learners who have been to school, are at school or will be in school during the 21st Century.

Generation Z children were born between 1995 and 2010. Some of them have already left school and are part of the job market, others are just leaving the schooling system now and entering into further education opportunities or the world of work.

Generation Alpha started in 2010 and the last of this generation will be born in 2025. They are in our schools, probably already in high school. The primary schools are all filled with Generation Alpha children.

And right behind them are Generation Beta who will start being born in 2025 and enter our schooling system from 2030 onwards.

These children are unique because they have grown up in a world where the internet is firmly established, a world where smartphones are the norm, and artificial intelligence (AI) is more useful than ever before. Many of them have used electronic and digital devices.

But, although many 21st Century Learners might know a lot about modern technology, they still need the skills and knowledge that will let them live, work and communicate in an interconnected multicultural world.

Technology can improve teaching

Technology provides many opportunities to **increase motivation and engagement**. Just think about all the interesting educational apps and digital games out there.

Not all learners are the same, but in a class the reality is often that they are treated as a homogenous group. Technology allows **personalised learning** to take place.

Technology allows **effective assessment** to take place. The myth exists that technology can replace the teacher in assessment, but the real value of technology is that it can manage the lower levels of assessment in terms of Bloom's Revised Taxonomy while the teacher can focus on the higher levels.

Technology can therefore **streamline teacher workloads**, not just in terms of assessment, but also in terms of planning and collaboration.

Developing empowered 21st Century Citizens

In the development of 21st Century Citizens, eLearning is important. To understand why this is true, we need to understand our situation in the 21st Century.

There have been many big changes in human development. We started off as hunter-gatherers and then we became farmers and the agrarian economy allowed for even more development.

As technology developed, machines were able to make things more quickly and effectively than before. The First Industrial Revolution that took place from the 18th to the 19th Centuries changed life substantially. It introduced the use of machinery that used steam to power things rather than human power.

Mass production became a reality, and we can speak of this as the start of the industrial economy.

The industrial economy was based on the production of goods. The Second Industrial Revolution brought improvements through electricity and new technologies that allowed for automated production lines that used to use humans, and then, as technology developed, robots became the workers on most production lines.

This, in turn, led to the Third Industrial Revolution in which data and information became hugely valuable and important. And now we are already in the Fourth Industrial Revolution. You can learn all about the Fourth Industrial Revolution in Via Afrika's

Teaching for the Fourth Industrial Revolution Course.

Despite being part of the Fourth Industrial Revolution, as teachers, we tend to still be focused on preparing our learners for an industrial economy. This doesn't mean that we all should become computer programmers or mathematicians. Artisans are as important as they have always been, but they also need to acquire new skills to prosper in the Fourth Industrial Revolution.

Reflection

- Make notes in your PD Journal.
- Compare what you thought about eLearning at the beginning of the session, to what you know about eLearning now.
- How does what you have learned change any of your answers?

21st Century Skills

The skills that were needed to work effectively in the First, Second and even the Third Industrial Revolutions are not as useful today in the 21st Century as we live through the Fourth Industrial Revolution.

Today, we're using skills that we were never taught at school.

So, what skills do our learners need? We would argue that the 6Cs and Digital fluency are vital skills.

The 6Cs of the 21st Century

1. Critical thinking

Critical thinking enables learners to make decisions and solve complex problems. They should be able to use their initiative and work independently. They should think proactively and find solutions to problems, preferably before they even become problems.

2. Creative thinking

We can define creative thinking as purposefully gaining new insights and encouraging different ideas through the use of existing information – often with the intention of solving a problem. It is not just about being creative and designing things, but about being able to see things from various angles.

Creative thinking is important because it enables us to see that there are a number of solutions to a problem. Without creative thinking, we are likely to keep trying what we found worked before, but this is not always productive. Creative thinking improves our problem-solving abilities.

3. Communication

Our learners might already be using digital media to communicate very effectively with each other, but they need to know when to use different language and grammar styles, and different registers when they are communicating with different people.

They also need to understand how to communicate effectively in face-to-face situations without the use of digital media.

But communication isn't just about words; it is also about learning how to communicate using multimedia, such as video, images and audio.

Effective communication allows for effective collaboration.

4. Collaboration

Collaboration is the skill of working effectively with others to jointly create a product – it could be a document or even an object – with others from a variety of backgrounds, both in person, and digitally.

Big industries often have partners in distant countries. They need people who can collaborate with others regardless of differences in culture, time and place. And they should be able to do it in person or using any of the digital tools available, for example Microsoft Teams, Zoom, Microsoft Word, and Google Docs.

5. Citizenship

Citizenship in this context does not merely refer to the citizen of a country but being the citizen of a community, too. Good citizenship requires respect for one another, a willingness to be part of a greater whole, and to contribute positively to one's immediate community, one's country and the world.

6. Character

In the 21st Century, the following character traits can contribute to success.

- Initiative
- Curiosity
- Persistence (or grit as it is sometimes called)
- Adaptability to change
- Social and cultural awareness
- Leadership

Task

- Select three of the 21st Century Skills that we have covered.
- Come up with two lesson ideas that you can use to teach each of these skills to your learners in your context.
- You will need to do some research if you get stuck.

Digital fluency and other skills

Digital **literacy** is defined as the ability to use digital devices like mobile phones, tablets and computers, and to use software. It also includes the ability to stay safe on the internet. Digital **fluency** is a deepening of the knowledge of devices, software and internet security. It implies the ability to make choices for the best result. The table below provides a summary of the differences.

A digitally literate person	A digitally fluent person
Can use a device.	Knows which device to choose among a selection of devices to get the best results.
Can use an app.	Knows that the same app on different devices will be slightly different and can choose the best app to use to get the best results.
Has social media accounts.	Knows to check the accuracy of posts before reposting.
Knows about passwords and viruses.	Has a deep understanding of internet security.

Many of our learners will arrive in our classes with digital literacy. It is our task as teachers to develop the **digital fluency** they require by explicitly teaching them the additional skills.

More skills that 21st Century Citizens must have

Here are a few of the additional skills we need to make working and living in the 21st Century easier.

Computational thinking

To put it simply, computational thinking is the step that comes before writing code for a program.

Computers need all the details of every step if they are to do the sort of things we want them to do. They cannot work with broad instructions. Computational thinking is the process of breaking down a problem into simple enough steps for a computer to understand. It includes a useful set of thinking skills for everybody.

When learners develop computational skills, they can formulate and express a problem and think logically. They can understand cause and effect and, as a result, they are better equipped to manage their lives, both at school and at home.

Computational thinking is broken down into four skills.

1. Decomposition means breaking down complex problems into smaller chunks.
2. Pattern recognition involves looking for patterns and seeing if any problems from the past can help to solve the current problem.
3. Pattern abstraction is about identifying the details that are relevant to solving the problem and ignoring those details that are not important.
4. Algorithm design means setting out the steps and rules that need to be followed in a particular order to achieve the same outcome each time.

Social intelligence

One of the criticisms of technology is that it could lead to isolation instead of engagement. Social intelligence means that we understand that people are all vastly different beings, and that we should deal with them as unique individuals with different needs, wants and goals.

Cross-cultural competencies

As 21st Century Citizens we will not only have to understand how to be effective in our own cultures, or in the cultures we share in our daily lives, but also be able to interact with cultures from around the globe.

Transdisciplinarity

We might be used to calling in experts in the field when we are working on projects, but in the future, we can no longer hide behind 'calling IT' when a presentation doesn't work. We need to broaden our skill set and areas of expertise so that we can move with agility between disciplines.

Design mindset

Whether you are engaging with an activity, a product or a service, when you approach the task with a design mindset you focus on the people involved in this, and their needs. Approach it like you would a design: think of the end user, collaborate with others, visualise what you want to achieve, try it out and don't be scared to change whatever doesn't work. You should be comfortable switching between analytical and creative thinking modes and dealing with ill-defined problems. In fact, a problem is the start of the process and mistakes are the learning experience you need.

Cognitive load management

Cognitive load is what we all experience in our daily lives – information flows into our lives via our senses, our smartphones, our emails, advertisements in magazines we read ... you name it. Deciding how to manage this is a critical skill for 21st Century Citizens.

Think about these questions.

- Should I engage with this particular issue or not?
- How can I prioritise my daily tasks?
- How can I deal effectively with distractions, such as blocking notifications on my smartphone to managing classroom noise levels?

Task

- How can you introduce computational thinking into your classes?
- Prepare some notes for each of the four skills elements of computational thinking describing a lesson you could develop to teach each skill.

Teachers and eLearning

Skills for 21st Century Teachers

Having considered the skills that are required of a 21st Century Learner and Citizen, let's consider the skills that a 21st Century Teacher needs to have.

Flexibility and adaptability to change

Resisting change leads to a number of problems at a personal and at a professional level. If you have not already done so, enrol for Via Afrika's **Implementing Digital Education in schools from a Change Management Mindset Course**. This will enhance your ability to deal with personal and professional change.

Ability to unlearn, learn and relearn

As one technology gives way to a new one, we need to unlearn the old, and learn the new. We should not be trying to keep doing things in the way that we did.

There will be times when you need to relearn how to do things or, in other words, learn to do something in a slightly different way.

Becoming skilled in this way will allow you to model the skill for your learners and set them up for success in the future.

eLearning: Concerns and criticisms

It is important to also talk about some of the concerns and criticisms of eLearning that have been raised.

Screen time

Parents are often concerned about the time learners should be spending in front of a screen. Research shows these concerns are not unfounded. It is, however, possible to ensure that the appropriate amount of time is spent looking at a screen. Learners need to be taught how to manage this themselves, and there are many apps that assist in this, too. As with all good education, we need a variety of activities. Using a digital device with a screen should be just one of them.

Cost

Cost is often raised as a major concern in relation to eLearning. Globally, the trend has been the production of a greater number of devices, which means that cheaper devices are becoming available. As the market competes for users of digital devices and data, different offerings are also created, such as being able to buy a data contract bundled with a device, which is then paid off over two years. Other options for schools are donor funding and crowdfunding. Cost is a reality but should not be an insurmountable barrier.

Effectiveness

Using technology in schools should not be merely a gimmick. Effective eLearning means commitment from the school as a whole to change. This means that devices are not just placed on top of teaching like a cherry on a cake, but rather embedded into teaching and learning like mixing different ingredients to make a cake. When you eat the cake, you don't see the eggs or the flour, for example. In the same way you should not be aware of technology as such when it is being used effectively in teaching and learning. For this to happen, we need to be sure that we are using effective pedagogies when we introduce technology into the classroom. We will learn more about this later in this session.

Distraction

One of the main concerns when we are implementing technology is that it will distract the learners. And if it is not done properly, distraction will happen. But if technology forms part of the learning experience, is well-considered, and is used daily, it will lose its novelty value and become a regular part of learners' lives.

Moral panic

The thought of connecting to the 'potential evils of the internet' and the use of 'clever devices' sometimes creates moral panic in a school community or in parents. Although this is understandable, the reality is that learners will, once they graduate, be exposed to all kinds of things. Would it not be better to prepare them for this while you are able to guide and support them?

We can use eLearning to teach learners how to make wise choices and intelligent decisions in an increasingly complex world. In other words, we must develop the digital fluency that learners require.

Reflection

- Make notes in your PD Journal.
- Think about the skills that teachers need as well as all the 21st Century Skills we have discussed.
- How competent do you feel in relation to each of these skills?
- If you feel unsure about how competent you are at a skill, what can you do to improve your competency?

Pedagogy and eLearning

Isn't teaching just the same with technology?

The answer is **no**.

The truth is, whenever you read about how eLearning failed in a classroom, you will find that what happened is that the teacher or the principal or the education department decided to put a digital device in the hand of each child with the expectation that – magically – everything would suddenly be wonderful.

There is no possible difference in outcome between a teacher standing in front of a class reading a paper textbook while her learners read a paper textbook and a teacher standing in front of a class reading from a textbook on a digital device while her learners read a textbook on a digital device.

Dr Fiona Aubrey-Smith has been instrumental in putting forward the idea that we should move away from the term EdTech, or Educational Technology, in favour of the name **PedTech**, in other words Pedagogical Technology for what happens when we want to use technology in the classroom.

She makes the point that technologies can be used in education for the following purposes.

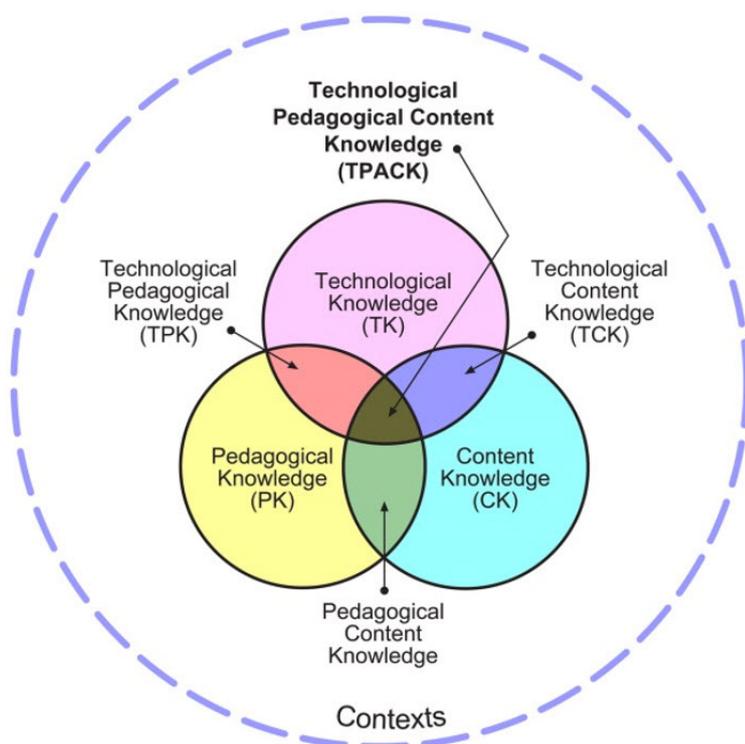
- For teaching – curriculum delivery, online teaching, content management, etc.
- For learning – communication tools, assessments, content creation and content consumption.
- For school administration – for example officially required school administration and management system responsibilities and other such administrative tasks.

She says that when we talk about EdTech, we tend to think about the systems and processes in education (for example, content delivery, assessment and administration). When we talk about technology, we think about the hardware and software that are needed for these processes.

What we are missing in this is the pedagogy: The how and why of what we do in the classroom. She argues that PedTech is therefore a better way of talking about technology use in education because we are foregrounding the how and the why of what we are going to teach, before we think about the technology. We are focussing on the learners and learning, not on the processes of education.

TPACK: Technological Pedagogical Content Knowledge

TPACK stands for Technological, Pedagogical and Content Knowledge. The TPACK framework is used to understand teaching and learning in 21st Century Classrooms.



This is a diagram of the TPACK framework, and the way in which the different kinds of knowledge intersect.

The framework was developed by Professors Punya Mishra and Matthew J. Koehler in the USA. As with any educational research, there has been positive and negative feedback about the framework, but the simplicity of the diagram is generally seen to be helpful in visualising the various components involved in a teacher's use of technology in class.

According to the framework, there are three kinds of knowledge teachers need if they are going to use technology effectively as part of their teaching practice.

- **Content Knowledge (CK):** The knowledge a teacher has about the subject they teach. If a teacher does not have the necessary Content Knowledge, it is their responsibility to gain that knowledge so that effective teaching and learning can take place.
- **Pedagogical Knowledge (PK):** This comes from the teacher's training, experience and lifelong learning about education. It is the knowledge about how learners learn. This includes teaching methodology, which means that a teacher knows how to teach in such a way that learners learn optimally. Pedagogical Knowledge also means knowing which forms of assessment are best for learning. For example, a teacher should know when summative assessment is appropriate and when formative assessment is appropriate.
- **Technological Knowledge (TK):** Teachers with Technological Knowledge will know which types of technology will engage and motivate their learners best, and how to use those technologies in the classroom. Remember that books are also a type of technology and have been used successfully by teachers for hundreds of years.

The three kinds of knowledge discussed above will form three more kinds of knowledge intersections.

- **Pedagogical Content Knowledge (PCK):** Having Pedagogical Content Knowledge means that teachers know how to teach the content of a specific subject. This means that the teacher knows the content of the subject well enough to find different ways of teaching it, and perhaps even different strategies to help learners understand and learn the content. Learning and teaching takes place where Pedagogical and Content Knowledge intersect. Learning and teaching here is **good, but dated** if it does not involve some type of technology.
- **Technological Pedagogical Knowledge (TPK):** Technological Pedagogical Knowledge means that the teacher knows how to use technology to teach and to have learners learn in a classroom. This means that the teacher uses technology, for example Twitter, Facebook, TikTok or blogs to engage learners, so that not only do they explore new knowledge, but they also create their own knowledge through their explorations.

If there is no meaningful interaction with content, these activities sometimes move away from the essential learning that must take place. Such learning and teaching may be **exciting, but it is disconnected** from subject matter.

- **Technological Content Knowledge (TCK):** Having Technological Content Knowledge means that teachers know how to use technology to explore the content of the subject. They give learners the opportunity, for example, to do research on an assessment task by using the internet or social media. If a teacher lacks a good pedagogical background, then learning and teaching here is **modern, but limited** since there is not much learning theory being implemented.

The sweet spot

True eLearning takes place where all these kinds of knowledge intersect. We can refer to this as the sweet spot, where we find Technological, Pedagogical and Content Knowledge (or TPACK).

The sweet spot in TPACK is where all three of the main kinds of knowledge intersect. When this happens, learners learn the essential content of the subject because of the application of good learning theory by the teacher, and this is supported by the use of technology.

The TPACK framework does not mean that teachers have to learn to use and implement new technologies; it simply means that teachers have to find creative ways to use the technology already at their disposal.

However, there is still one aspect of the TPACK framework we need to understand.

Contexts

The TPACK Venn diagram is framed by a dotted line called Contexts. There are different aspects that can influence the context in which teaching and learning take place.

- **Teacher training:** Has the teacher had the necessary training to identify and implement different strategies for the use of technology in class?
- **Experience:** Does the teacher have enough experience in teaching a specific subject to see where new and creative methodologies can be implemented?

- **Attitude:** Is the teacher fearful of new technologies, or is the teacher willing to learn as much as they can about those technologies so that they can use technology effectively in the classroom?
- **Resources:** Does the teacher have access to the necessary resources (computers, smartphones, audio technology, etc.)?

Contexts also go beyond just the classroom and these include socio-economic, historical, logistical and other environmental influences.

So, it is clear that TPACK is a framework that can guide teachers in the implementation and use of technology in their classrooms, to engage and motivate learners to discover new knowledge, and also to create their own knowledge from what they have found.

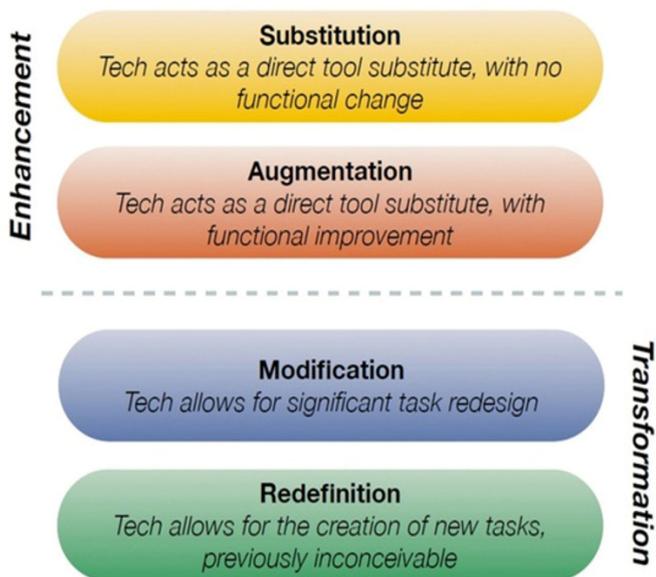
Reflection

- Make notes in your PD Journal.
- If you **have used technology** in your classroom, go back to that lesson plan and ask yourself the following questions.
 - Did the lesson hit the sweet spot of TPACK?
 - If not, what was missing?
- If you **have not used technology** in your classroom, write a lesson plan using technology, and then and ask yourself the following questions.
 - Does the lesson meet the sweet spot of TPACK?
 - If not, what is missing?
 - How easily can I add that now?

SAMR: Substitution, Augmentation, Modification, Redefinition

SAMR is a teaching and learning model that allows teachers to design, develop and implement learning experiences or programmes that are delivered by technology. It stands for Substitution, Augmentation, Modification, Redefinition and was developed by Dr Ruben Puentedura.

The SAMR model has four parts, as shown here.



S stands for Substitution

Here, technology is used in the same way that a more traditional tool – for example a printed book – would be used. Think about a printed book and a PDF. You read the printed book while holding it in your hands, and you read the PDF of the book on your computer or tablet. The PDF is a substitute for the printed book. Actually, it is just the printed book behind a glass screen.

A stands for Augmentation

Here, the technology can add to the teaching and learning experience. Something that augments teaching and learning is a tool that you use to perform common tasks more efficiently. A teacher with access to the necessary resources will be able to show the learners a YouTube video dealing with the topic that is being taught.

M stands for Modification

This is the stage in moving from traditional teaching and learning methodologies towards transforming the classroom into a 21st Century learning space. In modification, common classroom tasks are achieved by using eLearning tools, such as smartphones. Think about the way learners do informal assessment. Instead of giving learners the task to research at home, learners could be given access to a tablet, or they could use their own devices to do the assessment, while in class. The teacher is present to guide the learners in their work.

R stands for Redefinition

At this stage, the use of eLearning tools, such as tablets, enables teachers to develop and present innovative and creative learning tasks in ways that were previously impossible. It also gives the teacher the ability to develop tasks that were previously not even conceived of as possible.

Enhancement and Transformation

The first two levels will allow for the enhancement of the lesson while the last two levels will allow for the transformation of the lesson.

Using the SAMR model for lesson design

Since they are teaching in 21st Century schools, teachers should keep the SAMR model in mind when they start to design lessons, learning programmes and tasks. But technology should not be used for its own sake.

Instead, when teachers consider the SAMR model, they should ask themselves the following questions.

- How will using technology improve teaching and learning?
- What are the advantages of using technology instead of traditional methods?
- What new tasks can be developed by using technology?
- Will the use of the technology Substitute, Augment, Modify, or completely Redefine my lessons?

By answering these questions, teachers will be able to see what is possible with the resources available to them.

The following is an example of how you would apply the SAMR model in the classroom.

Substitution: Learners read history content on an eReader instead of in a paper textbook. They type their notes on a computer instead of writing them by hand.

Augmentation: Learners watch videos and other resources that have been added to their eBooks, to contextualise the content they are learning.

Modification: The teacher tells the learners to download a career guidance app, to do the interest and aptitude tests, and to record their individual results, after which they email these to the teacher. By letting learners take the tests online, the teacher has modified their teaching.

Redefinition: The teacher looks for an app in their subject field that provides real-time data feedback on the work that learners do on the app and they use this data to plan personalised interventions. Another example would be setting up a series of lessons in which learners interact with learners in another country to find out about their culture. They use Microsoft Teams and collaborate online in Microsoft PowerPoint to create a joint presentation which they record and upload to TikTok.

RAT: Replace, Amplify and Transform

The RAT model is similar to the SAMR model. It provides teachers with an understanding of how they could move from traditional teaching and learning approaches towards using technological approaches that engage and motivate their learners. It also provides teachers with a tool they can use to evaluate their transition to or use of technology. Let us look at how RAT works.

RAT stands for Replacement, Amplification and Transformation. It's a framework developed by Professor Joan E. Hughes that helps teachers to evaluate the way they use technology in their classrooms. We will look at each of these aspects.

REPLACEMENT

Technology serves as a different means to the same instructional end.

AMPLIFICATION

Technology increases efficiency and productivity without fundamental change.

TRANSFORMATION

Technology allows forms of instruction and learning that were previously inconceivable.

Replacement

Replacement takes place when teachers use technology instead of traditional methods, but for the same reason and with the same outcome. For example, if a teacher uses an interactive whiteboard instead of a conventional chalkboard to write notes for learners to copy but does not use any of the smartboard's other functions, technology is being used to replace conventional methods of providing learners with information.

Amplification

Amplification takes place when technology is used to make teaching and learning more efficient, allowing teachers and learners to be more productive, but without any basic change in teaching methodology or learning style. For example, learners use an eBook on their tablets instead of a printed book. Videos, audio clips and interactive games are added to the eBook to make the learning more engaging.

Transformation

Transformation takes place when technology is used to introduce completely new ways of teaching and learning that were not possible using conventional or traditional methods. For example, a teacher gives learners an online quiz on a section of work they have covered, and learners can be given instant feedback instead of waiting for the teacher to mark their assignment. True transformation would be allowing learners to develop their own learning paths.

Teachers can use a variety of content, such as apps, videos and the internet to teach learners new content and skills. The learners then work individually or as a team to think creatively, come up with new ideas, and create their own knowledge based on what they have found.

The RAT framework is a tool that teachers can use to help them move from conventional teaching and learning methods to modern methods that use technology. It also provides teachers with a way to measure the extent to which they are using technology in innovative ways.

Reflection

- Take the lesson plan you used for the previous Reflection Activity and ask yourself the following questions.
- Did I use technology to replace, amplify or transform the lesson?
- If the technology did not transform the lesson, what could I do differently the next time I teach this lesson?

Blended learning

What is blended learning?

Blended learning is a clear example of how eLearning can improve teaching and learning.

Traditional teaching and learning take place when the teacher stands in front of the class and teaches the learners as a single class unit. The teacher might from time to time ask the class to go on with work while helping an individual or a small group of students, but usually it is lecture-style teaching.

At the other extreme, we find technology and independent learning where the learners learn independently by using the technology available to them.

Blended learning is the combination of traditional teaching and learning, technology, and independent learning. But it is not simply 'mixed' learning. In blended learning, teaching and learning take place both online and in a physical space.

Let's see what this means in practical terms by looking at some blended learning models.

Whole class/computer lab model

Learners move between a classroom and a computer laboratory as part of their class time. However, the content that is covered is not separate. The learners may start work on a topic in class as a group and then explore it further individually or in small groups on their computers in the media centre or computer laboratory, or vice versa.

Whole class/small group model

Most learners work on their devices. The teacher works with smaller groups for clarification of a specific content area, helps them with more difficult content or prepares them for the next section of work.

Dual class model

Half the class work on their devices on their own. The teacher instructs the other half of the class using, for example, an interactive whiteboard. This is a model with many challenges and is not in general use.

Workstations model

The class is divided into various groups or stations. At each station, learners do different aspects of the same lesson. For example, one group could be sharing a laptop and looking for information online. A second group could be at a desk with several tablets where they have to find something on an app store or take photos. A third group could be working on a paper poster and the fourth group could be meeting with the teacher for further instructions or discussion.

Flipped classroom model

This model literally flips or reverses the traditional teaching pattern where the teachers would use daily class time to explain the work. The teacher would then give the learners homework so that they could practise the content at home in the afternoon or evening. This means that, when the learners need to put their knowledge into practice, they have to do it on their own, or with the help of a parent, guardian, etc.

As part of the flipped classroom model, the teacher gives the learner specific content to prepare at home. This content could take the form of an educational video that the learner would watch, or a topic the learner must investigate online. It does not have to be digital, though. It could also be information in a textbook or a passage in a novel that the learner must read.

The learner then goes to school the next day with this introductory knowledge of the content and comes to terms with it where the teacher is available to help with any problems. This means that the teacher does not spend time reading through content that the learners could read themselves. But when they need help in understanding a concept or putting it into practise, they do not have to struggle all on their own or ask help from someone who might not be well-trained. They can ask help from the teacher, in the classroom.

This is an exciting model, but if online content is used, learners will have to have connectivity or at least electricity at home. This might prove to be a challenge for many learners.

Reflection

- Make notes in your PD Journal.
- Which of the blended learning models appeals to you most? Why is that?
- Which blended learning model do you think is not worth it? Why is that?
- Which blended learning model scares you the most? Why is that?

Criticisms of flipped classrooms

Jeffrey Young, writing in Edsurge in February 2023, notes that the latest research on flipped classrooms shows that not all types of flipped classroom models are proving to be as effective as first believed.

These are the main criticisms of the flipped classroom model.

- There is often more passive learning taking place than if the learners just sat through an information sharing session. In these instances, the teacher provides input and gets the learners to watch a video. The learners have a double dose of input with no active learning.
- Many teachers don't assess if the learners learned anything from the flipped part of the lesson, and many learners skip the videos or watch them on double time and are therefore unprepared for the second part of the lesson – the in-class time.

A new flipped classroom: Fail-Flip-Fix-Feed Model

Despite these shortcomings, the original researchers argue that flipped learning can be done well but it needs to be rethought. The researchers offered an alternative to the traditional flipped classroom model. They call it the Fail-Flip-Fix-Feed Model.

You can read more about Manu Kapur, John Hattie, Irina Grossman and Tanmay Sinha's a variation on the two-step model of flipped learning here:

<https://www.frontiersin.org/articles/10.3389/feduc.2022.956416/full>



The Fail-Flip-Fix-Feed model.

Fail

The first step involves what is called 'Productive Failure'. The goal in this step is for the learner to be given an opportunity to solve a problem related to the targeted content.

The aim here is to activate relevant prior knowledge and to prepare learners to notice gaps in their knowledge. This will allow them to pay particular attention to the features of the targeted new knowledge.

This step also increases learner engagement with the learning and this, in turn, increases motivation. They want to know why they were not successful at solving the problem.

Designing a Productive Failure Task

When you develop the Productive Failure Task, you need to keep these six principles in mind.

1. Create a novel or unusual complex problem.
2. The difficulty of the complex problem must challenge but not frustrate the learners.
3. The complex problem must rely on prior knowledge that the learners have, but must not allow for them to simply apply those resources to get to a solution.
4. The complex problem must have many possible solutions.

5. The complex problem should be written in story form with dialogue.
6. The complex problem must be given to a small group of learners to ensure discussion and collaboration.

Presenting the Fail Step

There are three important rules to remember during this Fail Step.

1. Set up a safe space for the learners. Explain that they are going to find that there are many possible solutions to the problem, and they should not worry about being right.
2. Do not provide assistance when asked but constantly reassure learners that it is okay not to be able to solve the complex problem, as long as they tried various ways of solving it.
3. Your role as teacher during this time is not to provide any cognitive or content-related support, but mainly to manage the classroom and provide emotional support to allow for effective problem solving.

Flip

This step is usually the first step in the flipped classroom model and should follow the same processes.

Fix

The teacher and learners come together to explore the misconceptions and errors from the Fail Phase and compare them to the target knowledge they were introduced to in the Flip Step.

The goal in this Fix Step then is to give the learners the opportunity to understand how their solutions differ from the solution made possible by the targeted content knowledge in the Flip Step.

Presenting the Fix Step

This is a two-step process.

1. Start with a short information sharing session. Do not be tempted to simply repeat the information from the Flip Step.
2. Conduct a whole class discussion in which learners can talk about how their solutions would have been better had they known what they now know.

Feed

In this step the learners are given feedback through formative assessment. This gives the teacher a chance to identify and then resolve any further misconceptions certain learners may have.

Considerations for blended learning

Blended learning, and especially the flipped classroom, can create effective opportunities for excellent learning. The 21st Century needs independent citizens, and blended learning provides learners with practice on that. What is more, it provides opportunities for more teacher-learner interaction, especially in large classes.

However, blended learning cannot just happen. Certain things need to be in place.

- The teacher needs Technological Content Knowledge to ensure success. Furthermore, the teacher needs to be able to develop and plan lessons with an understanding of PedTech.
- There must be digital devices for the learners to use. Some of the models mean that not every learner needs a digital device, and in these models, you can still implement a version of the flipped classroom.
- Connectivity and data need to be available, especially if the learner is going to be working on a device at home.
- There has to be parent and school management buy-in. One reason flipped classrooms fail is because parents accuse teachers of not doing their job of teaching. Unless parents are informed about the benefits of these models, they will not be comfortable with a new approach. Parent information meetings supported by school management are essential.

Blended learning and you

Some of the models may not be a perfect fit for your own classes or school. Blended learning is unique, and you must create a blended learning model that works specifically for your context and learners.

Reflection

- Make notes in your PD Journal.
- Do you think the criticisms of flipped learning are valid?
- What do you think of the FAIL-FLIP-FIX-FEED model?
- Are you ready to try it in your class?
- Say why or why not.

About the Final Assessment



At the end of this training session, you will be asked to complete the Final Assessment.

If you complete the Final Assessment successfully, you will qualify for your virtual badge and certificate. You can see a sample here.



Final Assessment

Indicate the ONE correct response for each question.

1	Which one of the following statements about Generation Alpha learners is false?
a	They need no eLearning training as they already have all the skills.
b	They were born in and grew up in the internet age.
c	They still need training in how to live in an interconnected world.
2	The 6Cs that learners need to master are:
a	criticism, creative thinking, collaborating, communicating, citizenship, character.
b	critical thinking, creative thinking, collating, communicating, citizenship, character.
c	critical thinking, creative thinking, collaborating, communicating, citizenship, character.
3	Preparing learners for the Fourth Industrial Revolution means that _____.
a	they should all go to university
b	they should focus on careers in finance and business
c	they should have key 21st Century Skills
4	Talking of PedTech means _____.
a	technology is pedestrian
b	learners and learning are foregrounded
c	educational processes are foregrounded
5	Which of the following statements is correct?
a	Schools must buy what they can afford and train everyone.
b	Training is not critical if you want to implement eLearning.
c	Leave eLearning to the experts.
6	SAMR stands for _____.
a	Substitution, Augmentation, Manifestation, Redefinition
b	Substitution, Augmentation, Modification, Redefinition
c	Sensemaking, Augmentation, Modification, Redefinition

Final Assessment (continued)

Indicate the ONE correct response for each question.

7	Which one of the following statements is not true?
a	Augmentation: Using an eBook with additional embedded resources.
b	Redefinition: Getting data from learners as they complete online activities.
c	Substitution: Using YouTube videos in class for teaching and learning.
8	TPACK stands for _____.
a	Technological, Pedantic and Content Knowledge
b	Technological, Pedagogical and Content Knowledge
c	Technocratic, Pedagogical and Content Knowledge
9	Learning and teaching based in TPK is _____.
a	modern but limited
b	good but disconnected
c	exciting but disconnected
10	Using a 'normal' PDF without enhancements is an example of _____.
a	Augmentation
b	Modification
c	Substitution
11	_____ takes place when technology increases efficiency and productivity without fundamental change.
a	Replacement
b	Amplification
c	Transformation
12	Instant feedback when learners complete online assignments is an example of _____.
a	Replacement
b	Amplification
c	Transformation

Final Assessment (continued)

Indicate the ONE correct response for each question.

13	In the _____ model, learners move between a classroom and a computer laboratory.
a	whole class/computer laboratory
b	flipped classroom
c	workstations
14	In the _____ model, half the class work on tablets on their own while the teacher instructs the rest of the class.
a	flipped classroom
b	dual class
c	whole class/media centre
15	In the _____ model, learners prepare at home and practise content at school.
a	whole class/small group
b	dual class
c	flipped classroom

Additional Resources

Battelle for kids

<http://www.p21.org/our-work/p21-framework>

The framework for 21st Century Schools

<http://www.21stcenturyschools.com/21st-century-education.html>

Technology is Learning: SAMR Model

<https://sites.google.com/a/msad60.org/technology-is-learning/samr-model>

Kathy Shrock's Guide to SAMR

<http://www.schrockguide.net/samr.html>

EducationWeek: How do you define 21st Century Learning?

<http://www.edweek.org/tsb/articles/2010/10/12/01panel.h04.html>

OneLifeLearning: Pedtech

<https://www.onelifeLearning.co.uk>

An exploration of the relationship between teacher's pedagogical stance and ICT in teaching practices.

<http://oro.open.ac.uk/75001/> (Aubrey-Smith, F., (2020). Doctoral Thesis. The Open University.)

EdSurge: Does 'Flipped Learning' work?

<https://www.edsurge.com/news/2023-02-16-does-flipped-learning-work-a-new-analysis-dives-into-the-research>

[All resources last accessed August 2023]

Acknowledgements

Author/Artist and Licence	Artwork name
CollegeDegrees360, 2.0 Generic (CC BY-SA 2.0)	Girl on Laptop in Park
CollegeDegrees360, 2.0 Generic (CC BY-SA 2.0)	Geek Squad camp provides hands-on technology skills
Fort George G. Meade Public Affairs Office	Untitled, Elementary Technology Fair
Freepik, freepik.com Premium license (Unlimited use without attribution)	Female teacher helping children with assignment
Freepik, freepik.com, Premium license (Unlimited use without attribution)	Isometric young people using technological devices background
Freepik, freepik.com, Premium license (Unlimited use without attribution)	Flat farmer's day celebration illustration
Gstudioimagen, freepik.com, Premium license (Unlimited use without attribution)	Collaborative concept illustration
Grfxrf, freepik.com, Premium license (Unlimited use without attribution)	School classroom interior concept
Macrovector, freepik.com, Premium license (Unlimited use without attribution)	Big data analysis set
Macrovector, freepik.com, Premium license (Unlimited use without attribution)	Manufacturing process or production elements set
Macrovector, freepik.com, Premium license (Unlimited use without attribution)	Metal spring realistic transparent set
Microone, freepik.com, Premium license (Unlimited use without attribution)	Online education vector concept, international students and teacher on the screen
Pikisuperstar, freepik.com, Premium license (Unlimited use without attribution)	Flat creativity concept illustration
Storyset, freepik.com, Premium license (Unlimited use without attribution)	Connected concept illustration
Storyset, freepik.com, Premium license (Unlimited use without attribution)	Creative team concept illustration

Rastudio, freepik.com, Premium license (Unlimited use without attribution)	Responsibility abstract concept vector illustration
Rawpixel.com, freepik.com, Premium license (Unlimited use without attribution)	Character illustration of people with a world map
Unika06072014, freepik.com, Premium license (Unlimited use without attribution)	Steam locomotive old retro sketch hand drawn side view
Janeb13, woerterhexe,diane horvath	offices-business-computer
Marko Puusaar 3.0 Unported (CC BY-SA 3.0)	Mobile software development laboratory in The Estonian Information Technology College
Matthew Koehler/http://www.tpack.org	TPACK
Mithril Cloud 3.0 Unported (CC BY-SA 3.0), B.C.	Andrew Hall Classroom, picture of an e-learning classroom
Paulpaul,Kippelboy, 3.0 Unported (CC BY-SA 3.0)	Cybook Opus Bookeen.jpg,MNAC Museum Editathon with JHU Students
Pablo Garcia	2 kids at a 2Touch IWB in Melbourne 1
Pmspratik 3.0 Unported (CC BY-SA 3.0)	Islington College Multimedia Lab
Reuben Puentedura	SAMR
RudolfSimon 3.0 Unported (CC BY-SA 3.0)	OLPC classroom teaching
SandisterTei	Ghanaian using a tablet
Shelly Fryer	Classroom
University of Macedonia,Alegri, Romania 3.0 Unported (CC BY-SA 3.0)	Untitled,Teacher-writing-on-blackboard564
US Department of Education	SAD Hortons Kids 7
woodleywonderworks	School-education-learning-1750587-h
www.onelaptop.org	One Laptop per Child



Our Teachers. Our Future.

Via Afrika
40 Heerengracht, Cape Town,
8001
PO Box 5197, Cape Town, 8000
www.viaafrika.com

Please note: This document is for your personal use only.
Distribution in any format whatsoever is illegal.

Please note that the technical specifications, app features and icons, and hyperlinks to online content contained in the notes were accurate at the time of going to print.

These are subject to change as devices, apps and software develop, and as online content is moved, changed, or removed by content creators.

© Via Afrika 2023

No part of this course may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the publisher.