POST GRADUATE DIPLOMA IN EDUCATIONAL TECHNOLOGY (PGDET)*

MES 131: Educational Technology: An Overview
Answer the following questions in about 500 words each:

1.Explain the concept of Educational Technology. Describe any five current trends of technology use in education.

Ans: - Educational technology is a term used to describe a wide array of teaching-and-learning–related software and hardware that's increasingly being used in college and university classrooms. The ultimate goal of educational technology, also referred to as Ed Tech, is to enable an improved learning environment, which in turn is meant to boost student outcomes. It has also been proven to increase student engagement and participation in class. Educational technology refers to technology that usually helps facilitate collaboration in an active learning environment. By using educational technology, educators can create digital, interactive textbooks, gamify lessons, take attendance, assign homework, hold quizzes and tests and get real time results related to teaching material, style and format. Educational technology is disrupting traditional education and teaching methods by offering both teachers and students the ability to learn in an environment that makes use of now-common devices such as smartphones, laptops and tablets.

If you are an innovative educator, following the trends in education is probably not something new but rather essential. Even with this list, however, it is still up to you to choose the most suitable "trendy" aid for your teaching and training. Here we select the 10 latest educational technology trends that are must-know when diving into this industry.

1. eLearning

Distance learning became the top 2020 educational technology trend overnight because of the rapid spread of COVID-19 and school closures. This led to a rising demand for online educational platforms. eLearning is education or training delivered electronically. It can be slide-based online activities, or it can also be an online course that helps a business train employee in necessary skills.

With eLearning, educational content is delivered to learners through computers, laptops, tablets, or smartphones. Not only saving time but opening many doors for interactive learning. Rather than being in a passive experience, learners can choose what they need to learn quickly and easily, wherever they are. They also learn through interacting directly with on-screen information through, for instance, dragging content from one place to the next. Moreover, the decision-making scenarios in eLearning also encourage learners to make their own choices on what they will learn next.

In eLearning, learners just soak in knowledge through reading or viewing content, it changes the way education is delivered. Also, many eLearning courses include animation, podcasts, and videos that create a multimodal and practical learning experience.

The last point is, although eLearning has been around for a long time, it is staying green and continuously developing. Educators are using the advantages of technology to make learning more effective. That's why more and more online and blended learning courses are produced nowadays.

Variety is the outstanding feature of online learning platforms. You can teach your students in real time (synchronous) via live stream or group meetings using Zoom or Microsoft Teams, or you can use recorded (asynchronous) methodologies with a wide range of media and digital functions available to enrich lessons. A good online learning platform can also be combined with a Learning Management System (LMS) so you can keep track of your students' learning outcomes.

2. Video-Assisted Learning

In recent years, video-assisted learning has become more and more popular as classroom displays. The "video day" is no longer a television on a trolley being wheeled into a class. With the internet and digital devices, every day can be a "video day."

This trend is also booming in distance learning conditions, which students learn through computer screens. Videos, especially animated videos, are extremely beneficial to enrich lessons and make content comprehensible. It improves students' outcomes and reduces teachers' workload.

3. Blockchain Technology

The Distributed Ledger Technology (DLT) from blockchain brings so many benefits to education, especially data storage. Every time new data is added, it adds another "block" to the system, so the storage is technically limitless. Simultaneously, the data will be encrypted and distributed across multiple computers in the system. It makes transacting data decentralized and transparent.

Blockchain technology is used in Massive Open Online Courses (MOOCs) and ePortfolios to verify skills and knowledge. The DLT systems will answer the problems of authentication, scale, and cost for eLearning agencies. Moreover, it can help student applicants publish their accomplishments during the job-seeking phase.

4. Big Data Will Get Bigger

To cater to learners' needs, the learning experience needs to be personalized. And with COVID-19 and online learning booming, we now have bigger data than ever before. Instructional Designers have relevant information about learners' experiences to customize and present the course in a suitable format. Some information you should look for is the course's topic, learner enrollment, learner performance (time per course, completion, test result), and learner feedback (rating, survey).

5. Artificial Intelligence (AI)

AI now is the "in thing" in the US EdTech market. People have predicted that through 2021, AI could become the primary trend and grow by more than 45%. So why is the trend booming in one of the world's largest markets for EdTech? First and foremost, AI can automate basic activities in education, like grading. It's now possible for teachers to automate grading of the multiple-choice and fill-in-the-blank questions. Thus, automated grading of students' writing may not be far behind.

Furthermore, both learners and educators could benefit from AI. For example, students could get help from AI tutors when teachers are too busy to take care of everyone. Also, AI-driven programs can give both learners and educators helpful feedback. That's why some schools use AI systems to monitor student progress and to alert teachers when there might be an issue with students' performances. Therefore, it's not too far fetched that AI is a powerful assistant for in-class teaching. Meanwhile, why don't you help your learners get more out of the educational experience via AI?

2.Describe the major drivers which help educational managers to create effective and lasting change in any technology related environment.

Ans: -

The response to this question is the focus of the OECD project*, Innovative Learning Environments*, and has produced a sampling of the rich array of new visions for education around the world. As one might imagine, many learning environments have looked to technology in their efforts to redesign teaching and learning. While technology integration has long been a key area of concern in education, the intersection of technology with our rapidly transforming educational landscape is framing the nature of technology in education in profound, new ways. New and emerging technologies are provoking a re-conceptualization of teaching and learning, while also serving as catalysts for transformation and innovation.

Successfully preparing all learners with the skills and capacities for 21st century citizenship—global awareness, creativity, collaborative problem-solving, self-directed learning—is no small order, and many educational leaders are finding that the traditional forms of education that have evolved through the end of the last century are simply inadequate for achieving these goals. At the same time, while our outer world was transforming, considerable advances have been made in the learning sciences, forcing educators to reconsider how they approach learning, instruction, and the environments created to foster these. Finally, dramatic advances in educational technology have inspired powerful new ways for learners to engage with all kinds of content and activities in their own self-direct learning experiences. The juxtaposition of these three events creates a very interesting challenge and opportunity—a space to reconsider, re-imagine, and re-invent learning environments able to prepare and excel each individual for effective life-long learning.

THE DRIVE OF TECHNOLOGY FOR SCHOOL CHANGE

While many, if not all, systems of education seek to at least improve and advance (and some even seek to radically transform), this does not necessarily mean one has to leverage technology to do so. However, there are several key drivers pushing technology as a key component for educational system change, and these serve as central reasons that educators and education stakeholders should consider 2 the growing relevance and implications of technology and technology-based school innovations (OECD, 2010):

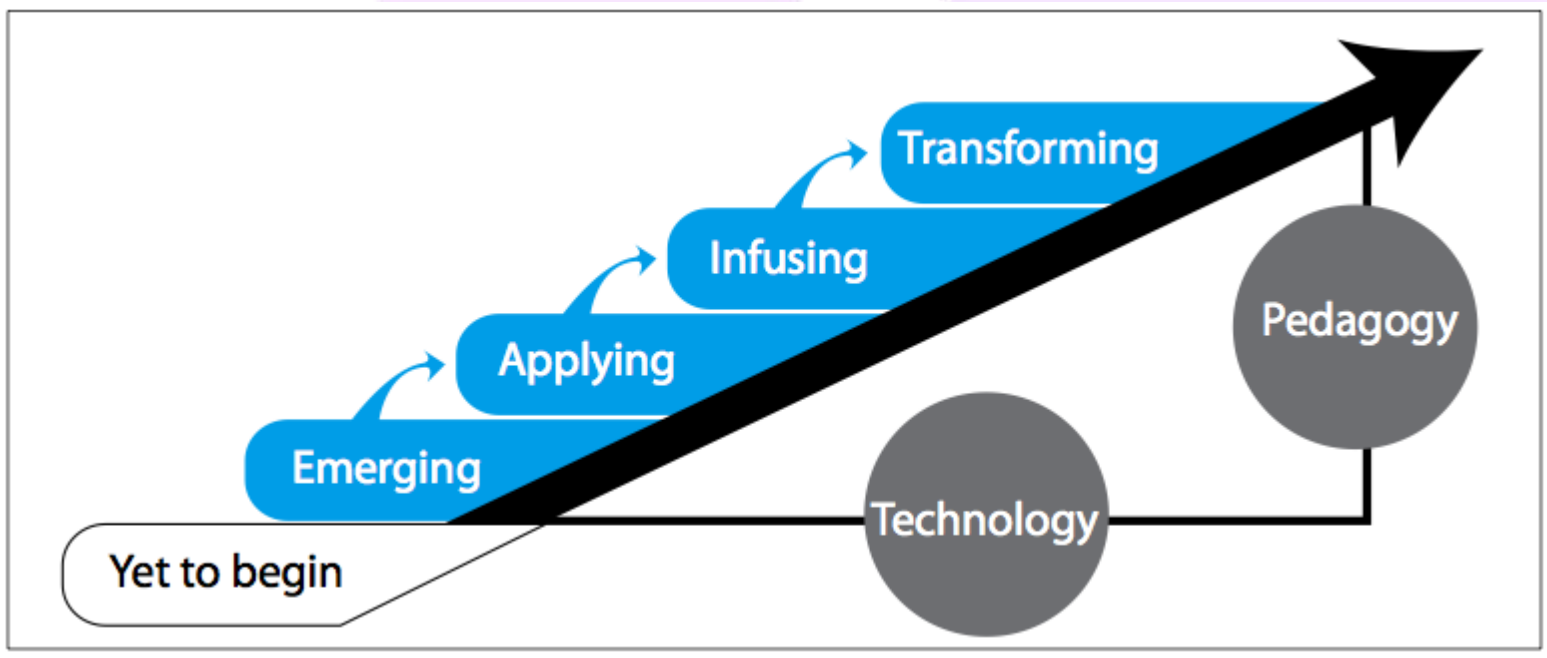
- Technology can perform several key functions in the change process, including opening up new opportunities that improve teaching and learning—particularly with the affordance of customization of learning to individual learner needs, which is highly supported by the learning sciences;

- The skills for an adult life include technological literacy, and people who do not acquire and master these competencies may suffer from a new form of the digital divide, which will impact their capacity to effectively operate and thrive in the new knowledge economy;
- Technology is an integral part to accessing the higher-order competencies often referred to as 21st Century Skills, which are also necessary to be productive in today ‘s society.

The New Millennium Learners (NML) work of the OECD over the last several years has contributed to these foundational elements, by describing the fundamental nature of learners in today ‘s world. Increasingly —connected, || students today are constantly surrounded by a constellation of digital devices. As described in this work, new millennium learners‘ lives are —highly dependent on technology up to the extent that their social and cultural practices would not be as they are if digital media were not available anytime, anywhere to them||; this body of work also describes the educational implications the NML research, explaining that —students are not only accessing, managing, creating and sharing knowledge in dramatically different ways as their teachers often do, but also have radically new expectations regarding what a quality learning experience should be|| (Pedro, F., 2009, p.2). As a result, students are bringing attitudes, beliefs and perceptions to learning environments around their own learning experiences there, and the role that technology should play in it.

Evolving, Transforming and ***Reinventing***

These stages offer us a lens through which we can observe how ICT has leveraged incremental and deep change in learning environments (see Figure 1a). The first three stages represent learning environments using technology to *evolve*—using technology, at varying degrees, as a means to make advances towards more digitally-rich, 21st century learning environment. Schools that seek a more holistic change and dramatically overhaul the existing environment have leveraged technology to completely *transform*—where all elements of the learning environment become new as they drive towards this new vision.



Be it big or small, emerging new evidence of technology use or completely transforming whole learning environments, education systems and schools that fall into these categories are using technology at varying degrees to move in the direction of the 21st century. However, there are a number of learning environments going beyond this, to *reinvent* the fundamental model that drives their organization of learning and teaching. In this way, they transcend 'transformation through technology ‘because technology is not used as a lever, but rather, used to appropriately fill in the methods and approaches in their redesign

3.What is meant by Learning Management Systems (LMS)? Describe the steps and criteria that you would follow while deciding on the use of LMS in an educational institution, with an example.
Ans: -

A learning management system (LMS) is a software application or web-based technology used to plan, implement and assess a specific learning process. It is used for eLearning practices and, in its most common form, consists of two elements: a server that performs the base functionality and a user interface that is operated by instructors, students and administrators. Typically, a learning management system provides an instructor with a way to create and deliver content, monitor student participation and assess student performance. A learning management system may also provide students with the ability to use interactive features such as threaded discussions, video conferencing and discussion forums. LMSes are frequently used by businesses of all sizes, national government agencies, local governments, traditional educational institutions and online/eLearning-based institutions. The systems can improve traditional educational methods, while also saving organizations time and money. An effective system will allow instructors and administrators to efficiently manage elements such as user registration, content, calendars, user access, communication, certifications and notifications. The Advanced Distance Learning group, sponsored by the United States

Department of Defense, has created a set of specifications called Shareable Content Object Reference Model (SCORM) to encourage the standardization of learning management systems.

A learning management system can be thought of as a large repository that allows users to store and track information in one place. Any user with a secure login and password can access the system and its online learning resources. Or, if the system is self-hosted, the user must either install the software on their hard drive or access it through their company's server.

Some common features found in a successful LMS include:

Responsive design - Users should be able to access the LMS from whatever type of device they choose, whether it's a desktop, laptop, tablet or smartphone. The LMS should automatically display the version best suited for the user's chosen device. Additionally, the LMS should also allow users to download content so it is accessible while offline.

User-friendly interface - The user interface (UI) should enable learners to easily navigate the LMS platform. The UI should also align with the abilities and goals of both the user and the organization. An unintuitive UI risks confusing or distracting users and will make the LMS ineffective.

Reports and analytics - This includes eLearning assessment tools. Instructors and administrators must be able to view and track their online training initiatives to determine if they are effective or need adjusting. This can be applied to groups of learners and individuals.

Course and catalog management - The LMS holds all the eLearning courses and the related course content. Admins and instructors should be able to create and manage these catalogs and courses in order to deliver a more targeted learning experience.

Content interoperability and integration - Content created and stored in an LMS must be packaged in accordance with interoperable standards, including SCORM and xAPI.

Support services - Different LMS vendors offer varying levels of support. Many provide online discussion boards where users can connect and help each other. Additional support services, such as a dedicated toll-free service number, are available for an extra cost.

Certification and compliance support - This feature is essential to systems used for online compliance training and certifications. Instructors and admins should be able to assess an individual's skill set and identify any gaps in their performance. This feature will also make it possible to use LMS records during an audit.

Social learning capabilities - Many LMSes have started including social media tools within their platform. This allows users to interact with their peers, collaborate and share their learning experiences.

Gamification - Some LMSes include game mechanics or built-in gamification features that allow instructors and admins to create courses with extra motivation and engagement. This can help students who need additional incentive to complete the course, possibly in the form of leaderboards, points and badges.

Automation - Learning management systems should enable administrators to automate repeated and tedious tasks. Examples include user grouping, new user population, user deactivation and group enrollments.

Localization - It is important for LMSes to include multilingual support features so the learning and training content can remain unaffected by language barriers. Some LMSes integrate geolocation features that allow them to automatically present the appropriate version of the course immediately upon access.

Artificial intelligence (AI) - Finally, artificial intelligence can help an LMS create personalized learning experiences for users by providing course formats suited to their needs, and by suggesting topics the user may find interesting based on the courses they have already completed.

Examples of learning management systems

As mentioned before, employee training and onboarding are some of the most common uses for LMSes. When using an LMS for these purposes, instructors can create immersive learning experiences that allow users to develop new skills and problem-solving capabilities. For example, an LMS could be used to create tutorials that incorporate augmented reality (AR), virtual reality (VR) and even AI training. This will likely have the effect of improving creativity and innovation throughout the workforce.

Another example of an LMS use case is for sales training. This can include onboarding and training, but also extends to include the creation of seminars on product knowledge, customer interaction training and case study-based tutorials that use previous experiences with clients to improve future interactions.

An LMS can also be used to provide students with blended learning experiences. Blended learning combines traditional teaching in the classroom with online learning tools. This method is more effective than simple face-to-face education because it enriches the classroom-based experience with additional digital content that can be customized to fit a student's specific learning needs.

MES 132: Computer in Education
Answer the following questions in about 500 words each:
1.Define troubleshooting in computers. Discuss basics of troubleshooting.

Ans: -

Do you know what to do if your screen goes blank? What if you can't seem to close an application, or can't hear any sound from your speakers? Whenever you have a problem with your computer, **don't panic!** There are many **basic troubleshooting techniques** you can use to fix issues like this. In this lesson, we'll show you some simple things to try when troubleshooting, as well as how to solve common problems you may encounter.

General tips to keep in mind

There are many different things that could cause a problem with your computer. No matter what's causing the issue, troubleshooting will always be a process of **trial and error**—in some cases, you may need to use several different approaches before you can find a solution; other problems may be easy to fix. We recommend starting by using the following tips.

- **Write down your steps**: Once you start troubleshooting, you may want to **write down** each step you take. This way, you'll be able to remember exactly what you've done and can avoid repeating the same mistakes. If you end up asking other people for help, it will be much easier if they know exactly what you've tried already.
- **Take notes about error messages**: If your computer gives you an **error message**, be sure to write down as much information as possible. You may be able to use this information later to find out if other people are having the same error.
- **Always check the cables**: If you're having trouble with a specific piece of computer **hardware**, such as your monitor or keyboard, an easy first step is to check all related cables to make sure they're properly connected.
- **Restart the computer**: When all else fails, **restarting the computer** is a good thing to try. This can solve a lot of basic issues you may experience with your computer.

Using the process of elimination

If you're having an issue with your computer, you may be able to find out what's wrong using **the process of elimination**. This means you'll make a list of things that could be causing the problem and then test them out one by one to eliminate them. Once you've identified the source of your computer issue, it will be easier to find a solution.

Scenario:

Let's say you're trying to print out invitations for a birthday party, but the printer won't print. You have some ideas about what could be causing this, so you go through them one by one to see if you can **eliminate** any possible causes.

First, you check the printer to see that it's turned on and plugged in to the **surge protector**. It is, so that's not the issue. Next, you check to make sure the printer's **ink cartridge** still has ink and that there is paper loaded in the **paper tray**. Things look good in both cases, so you know the issue has nothing to do with ink or paper.

Now you want to make sure the printer and computer are **communicating correctly**. If you recently downloaded an **update to your operating system**, it might interfere with the printer. But you know there haven't been any recent updates and the printer was working yesterday, so you'll have to look elsewhere.

You check the printer's **USB cord** and find that it's not plugged in. You must have unplugged it accidentally when you plugged something else into the computer earlier. Once you plug in the USB cord, the printer starts working again. It looks like this printer issue is solved!

This is just one example of an issue you might encounter while using a computer. In the rest of this lesson, we'll talk about other common computer problems and some ways to solve them.

Simple solutions to common problems

Most of the time, problems can be fixed using simple troubleshooting techniques, like **closing** and **reopening** the program. It's important to try these simple solutions before resorting to more extreme measures. If the problem still isn't fixed, you can try other troubleshooting techniques.

Problem: Power button will not start computer

- **Solution 1**: If your computer **does not start**, begin by checking the power cord to confirm that it is plugged securely into the back of the computer case and the power outlet.
- **Solution 2**: If it is plugged into an outlet, make sure it is a **working outlet**. To check your outlet, you can plug in another **electrical device**, such as a lamp**.**
- **Solution 3**: If the computer is plugged in to a **surge protector**, verify that it is turned on. You may have to **reset** the surge protector by turning it off and then back on. You can also plug a lamp or other device into the surge protector to verify that it's working correctly.

- **Solution 4**: If you are using a **laptop**, the **battery** may not be charged. Plug the **AC adapter** into the wall, then try to turn on the laptop. If it still doesn't start up, you may need to wait a few minutes and try again.

2.Discuss strategies for the well-being of the computer user.

Ans: -

Office jobs have typically required employees to spend a lot of time on the computer. There are emerging work fields outside of a traditional office that has many of these same requirements. Today many people do remote work such as working from home, especially where a computer is a primary tool. Being able to work at home is a tremendous benefit. Nevertheless, that benefit does come with the cost of having to be in a sedentary lifestyle for an extended period. It can lead to weight gain, back problems, and some other health problems that you really should avoid. The good news is that people who do remote work from home can remain more active and healthier. With no supervisor monitoring you, the ability to get up, move around, stretch, and do other activities of this nature is much more readily available.

1. Use A Standing Desk

One option you may want to consider is to get a different kind of desk. Standing desks are becoming a popular option for people because they promote a healthier work environment. The human body was never meant to sit at a desk for 8 hours a day. Doing so puts a lot of strain on your body and can cause a lot of negative health effects. The problem here is that if you have a job that requires working on a computer, you are going to have to spend a lot of time at a desk. But what if you didn't sit at your desk and stood behind it instead. There are a lot of standing desk options out there that range from an entirely new desk, to a desk extension you can put on top of an existing one. While it may seem odd at first, in time, you should adapt to your standing desk and become comfortable with it. No longer will you have the same type of health-related concerns that come with sitting for long periods.

2. Get Up and Move Around Regularly

The main health problems arising from sitting in front of a computer for longer are related to the lack of movement and activity involved. So, to counter this, you should make a point to get up and move around regularly. You can even set the alarm on your phone to go off every hour. Get up, go for a walk, or do a simple house chore that will force you to get up and go away from your desk for at least a few minutes. Even this small amount of activity will help improve your blood circulation, relieve strain on your neck and back, and also burn a few calories. You should also make sure to get as much physical activity as possible throughout the rest of your day. Exercise regularly, and little things like taking the stairs instead of an elevator can help you to improve your health.

3. Give Your Eyes A Break from Computer

You may not realize it, but sitting and staring at a computer screen all day long puts a lot of strain on your eyes. While a computer screen is not exceptionally bright, it does produce light that you are staring into, sometimes for hours on end. It can put a lot of strain on your eyes, which, over time, can contribute to vision problems, headaches, and other health problems. The good news is that there is a simple solution to avoid overtaxing your eyes. Every few minutes, take a second, close your eyes, and give them a

break. Make sure that you also avoid staring at a computer screen, which is a common problem that most people don't even realize they have. Blinking is essential, and doing so can help you to keep your vision sharp.

4. Keep Healthy Snacks Around Your Desk

Working at a computer all day is not a physical job. It means you are not burning a lot of calories while you are sitting and typing your keyboard. So, the last thing you want to do is to compound the problem by snacking on junk food all day long. Eating highly processed foods that are high in calories, sugar, and fat will only add to the health problems caused by a sedentary job. You have to eat, so make sure you are eating the right food. The simplest way to avoid snacking on unhealthy food is not to have them around. Keep foods such as beef jerky, nuts, and other high protein foods around your desk. So, when hunger strikes, you can satiate it with a healthy snack.

5. Keep Your Desk Clean

One of the most common problems with a desk job that requires you to sit in front of a computer all day is a problem many people aren't even aware of.

Conclusion: Health is A Priority and Is Easy To Do

It's essential to be aware of the fact that you are performing a job harming your health. That's the bad news. The good news is that it doesn't take a lot of time or effort to reduce those adverse effects. So, move around more, keep your work area clean, snack on healthy foods, and rest your eyes. It can prevent a lot of the negative effects associated with a sedentary job. So, make these little steps to make sure you look and feel your best.

3.Select a topic from any subject from any class of your choice and then prepare a detailed UDL based lesson plan along with required ICT inputs.

Ans:

UDL LESSON PLAN

Subject Science Grade 9-12 Date 10/10/2021

UNIT/LESSON	Osmosis and Capillary Action	
CONTENT OBJECTIVE(S)	ts will understand how a plant is fed and watered.	
COMMON CORE STANDARD	BIO.912.8c Match a plant/animal to a resource it uses from its environment. **-Learning progression would include how water moves through a plant.**	
FOCUS/ KEY QUESTIONS	1. If you wanted to give someone a bouquet of carnations to celebrate the Fourth of July and could find only white ones, what could you do to some of them to get red and blue ones too? Do you think the florists do the same thing? 2. If you got a bouquet of flowers and you wanted them to stay fresh for a long time, what should you do for them? 3. What if the flower were placed in clear water? Would the water still go through the stem? 4. Can a plant live without a stem?	
LESSON PREASSESSMENT	**What do students know about plants? Do they know the parts of plant? What is photosynthesis? -Done through observations, previous lesson assessments, and a smartboard activity to label the parts of a flower at the beginning of the lesson.**	
BARRIERS TO LEARNING	**Many students have little to no mode of communication. Many students have severe behavior concerns.**	
PLANNING WITH UDL	**Multiple means of representation** Video – audio and visual information Use of multiple media – pictures, texts, web, etc.	**There will be visuals for every step of the experiment. The students will watch a video of other students completing the experiment. They will also watch a video on photosynthesis. The students will use a smartboard activity to label the parts of the flower.**
	Multiple means of action and expression Teacher observation and feedback on note-taking sheets Choice of presentation format	**Teacher will observe the students while watching the videos and while labeling the parts of a flower. The teacher will explain the experiment and then walk the students through the experiment step-by-step, providing visuals and verbal instructions.**
	Multiple means of engagement Choice of presentation Work in groups to foster collaboration and communication	**The students will each have their own flower, working in a large group. The classroom only holds 8 students, 1 teacher, and 3 other staff members. Therefore, the teacher will lead the entire group, while the 3 other staff members assist where needed. The students will be expected to complete each step of the experiment on their own, while**

		being observed by teacher and other staff members. Since the students have limited communication, the teacher and staff members will encourage talk about their experiment by asking questions relating to their experiment as we move through the step-by-step instructions.
READING/ VOCABULARY	**BEFORE: photosynthesis, stem, resource** **DURING: osmosis** **AFTER: capillary action**	
ASSESSMENT	**Assessment will take place throughout the lesson to see if the students complete the steps of the experiment correctly. There is a checklist that will be used to determine if each step of completed independently, with prompts, or not completed at all.**	
MATERIALS	**10 long stem carnations** **food coloring** **20 clear cups** **water** **knife/sharp blade (used by teacher/staff only)**	

LEARNING STRATEGIES

WARM UP (5 min)	Very short video of photosynthesis and smart board activity labeling parts of a plant. (2 minute video, 3 minute smartboard activity)
INTRODUCTION/ MOTIVATION	Explain the lesson is an experiment involving water, food coloring, and flowers
WHOLE CLASS ACTIVITY (20 min)	**Instruction: The teacher will explain photosynthesis and osmosis to the students and how they work together. The teacher would explain that if osmosis did not occur, photosynthesis cannot happen and therefore, the plan would wilt and die. The teacher will then explain the experiment.** **Modeling: The teacher will demonstrate osmosis and photosynthesis via videos so the students can understand better what is going to happen during the experiment.**
GUIDED & INDEPENDENT PRACTICE WITH UDL	**The teacher will guide the students through the experiment. The teacher will explain each step and provide visuals with verbal instructions on what to do. The students will be expected to complete each step independently and will be assessed upon their involvement with each step, whether they were able to complete the step independently, with prompting, or not at all.**
CLOSURE/ EXIT PASS/ (5min)	Explain that we're going to take a couple days on this experiment. Also, have the students predict what they foresee happening with their flower. Once they have turned in their prediction, the lesson will conclude.
HOMEWORK	n/a