

CHAPTER 13

Micro-Learning Planer (MLP)

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INTRODUCTION

In this digital age, continuous technological changes are inspiring new ideas and strategies that improve learning. As our lifestyles change, so do our learning requirements. Many studies have shown that teaching with small chunks of information improves information retention (Luminita, 2017). Micro learning dictates that the content should be small and interconnected with a focus on individual learning objectives (Singh, 2014).

Many studies have found that online learning information is usually made up of tiny bits. The essential goal of those small portions is to achieve the goal. These little portions are crucial and beneficial for learning in this regard. The research separated the online information into 16 chapters and three student groups. Group one answered all of the questions on the test, group two answered four questions, and group three answered eight questions. Students supported the same test in the second stage after the first. Small bits of knowledge helped students retain information in the first and second stages of the study. Small chunks boost working memory capacity and provide a better learning environment for students. Therefore, Micro learning allows students to learn quickly and recall information through shorter learning modules (Luminita, 2017).

Microlearning may not be the finest educational strategy, but, it is indeed an excellent way to bring together micro-media environments. Microcontent is more holistic than mere data in a sense that data does not always provide complete information, but microcontent does (Hodgins, 2001). The present age of the IOT and consistent web presence makes it pertinent that available learning materials are converted into relevant chunks of microlearning content. This is the reason why Google has become the most effective e-learning tool. This informal microlearning is the e-learning design of the future. Some of these can still be macro-structured content in courses but in future the e-learning content developer must make these learning materials into micro-structured digital form. Some of these will continue to be macro-structured content in the courses, but in the future, e-learning content developers will need to create micro-structured learning materials in digital form.

BACKGROUND OF THE TOOL

Micro-learning is the process of learning through short, digestible, well-organized units. Micro-learning caters to the needs of students while also achieving the goals set by instructors. Microlearning is beneficial in catering the dwindling attention spans of Gen z and Alpha generation learners in the most efficient and effective manner possible. The background of micro-learning tool is as follows:

1. Micro-learning helps teacher educators achieve single learning objective at a time.

A learning objective is a statement which defines what the learners will be able to do or know after completing the study module. Micro-learning lessons are beneficial as one micro-learning lesson deals with only one performance objective per module. This ensures that the learner takes one step at a time so that he/she clearly understands it, before moving to the next one.

2. Micro-learning provides specific and targeted information to the learners.

Micro-learning mostly offers only important information. This saves a lot of time and makes micro-learning highly concise and to-the-point with targeted knowledge. It removes the ambiguity of what is significant and what isn't, and just provides the information required to complete the task.

3. Micro-learning is relevant for short attention spans of new age learners.

Micro-learning is so well-structured that it takes no more than 8-10 minutes to complete. This feature of micro-learning makes it ideal for today's learners with short attention spans and tight schedules.

4. Micro-learning strategies comes in variety of formats.

Micro-learning strategies won't always take the form of traditional learning forms. They can be self-contained learning modules in the form of a short movie, an infographic, a podcast, a quiz, scenarios, whiteboard animations, interactive PDFs, or games, among other formats. This will help to pique learners' interest and appeal to a variety of learning styles.

5. Micro-learning can be utilised at various points of the learning lifecycle.

The beauty of micro-learning is that it can be used for any kind of learner at any point of the learning cycle. It can be used in school teaching, teacher training delivery, and for continuous learning for professionals. It is also easy to blend with other teaching strategies.

THE THEORETICAL BACKGROUND OF THE TOOL

Microlearning Theories

Theories	Description
Cognitive Flexibility (Jean Piaget)	The ability to spontaneously restructure one's knowledge in a variety of ways in adaptive response to radically changing situational demands, allowing knowledge and abilities to be transferred to new learning situations.
Adaptive learning (Charles Darwin)	According to the Adaptation theory, also known as survival theory or survival of the fittest, adaptive learning refers to an organism's ability to adapt to changes in its environment and make adjustments over time is referred to as adaptive learning.
Situated Learning (Lave and Wenger)	According to Lave and Wenger, learning is unintentional and situated within authentic activity, context, and culture. Cognitive apprenticeship (Brown, Collins, & Duguid) is a related idea.
Discovery Learning (Bruner)	Discovery learning is an inquiry-based teaching technique that argues it is ideal for students to discover facts and correlations on their own.
Social Development (Vygotsky)	According to Vygotsky, social interaction precedes development. He further asserts that the consciousness and cognition are the end product of socialization and social behaviour.

■ Cognitive Learning Theory (Jean Piaget):

The Cognitive Learning theory, developed by Jean Piaget in 1936, suggests that knowledge is actively constructed by learners based on previously learned knowledge. The theory is concerned with how information is processed by the brain and how learning occurs through that internal processing of information. According to the theory, there is a set amount of information that can be remembered at a time and therefore, the theory suggests ways to maximize the mind's productivity by minimizing distracting information. In the Cognitive theory of Multimedia learning, the overarching principle is that we learn more effectively from words and pictures than from words alone. Drawing from this theory, Microlearning focuses on human ability to spontaneously restructure knowledge in many ways in adaptive response to radically changing situational demands, to facilitate the transfer of knowledge and skills to new learning situations. Moreover, microlearning utilizes a wide variety of multimedia tools to make the learning modules interactive to make learning more effective.

■ **Adaptive learning Theory (Charles Darwin):**

According to Charles Darwin's Adaptation theory, also known as survival theory or survival of the fittest, adaptive learning refers to an organism's ability to adapt to changes in its environment and adjust accordingly over time. Microlearning helps create customized content for learners based on their proficiency levels. It is associated with extensive testing to determine where a learner is and what they need to complete. Results from this testing are used to create custom learning paths for each user based on their goals.

■ **Situated Learning (Lave and Wenger):**

This theory argues that learning is necessarily situated, i.e., learning occurs in the process of participation in communities of practice. According to the theory, newcomers join communities of practice and learn through immersion in the new community by absorbing its modes of action and meaning as a part of the process of becoming a community member. Learning viewed as a situated activity has as its central defining characteristic called the legitimate peripheral participation which defines how newcomers eventually become experienced members and later older members in the community of practice. Based on that Microlearning gives opportunity to deal with unintentional and situated learning within authentic activity, context, and culture. Cognitive apprenticeship (Brown, Collins, & Duguid) is a related idea.

■ **Discovery Learning Theory (Bruner):**

Discovery learning theory was introduced by Jerome Bruner. Discovery learning is a method of inquiry-based instruction. This theory encourages learners to build on past experiences and knowledge, use their intuition, imagination and creativity, and search for new information to discover facts, correlations, and new truths. Learning more than absorbing what was said or read, leaning means to actively seeking for answers and solutions. The discovery learning educational sessions should be well-designed, highly experiential, and interactive. Instructors should use stories, games, visual aids, and other attention-grabbing techniques that will build curiosity and interest, and lead learners in new ways of thinking, acting and reflecting. The techniques utilized in Discovery Learning can vary, but the goal is always the same, and that is the learners to reach the end result on their own. In alignment with this theory, Microlearning helps discover facts and relationships on their own.

■ **Social Development Theory (Vygotsky):**

In this theory, Leo Vygotsky explains that socialization affects the learning process in an individual. According to him, learning occurs in social interactions. This means that when we talk to our peers or adults, we talk to

them for the sake of communication. After we interact with other people, we tend to internalize what we say. A traditional classroom model where the teacher transmits knowledge to students is still widely prevalent, although it is now being accepted that a group learning context can make the learning faster and efficient. Because of social development theory, many schools are now encouraging recitation so as to reciprocate the learning experience inside the classroom. This means that the teacher also learns from the students as the students learn from the teacher. Microlearning gives opportunity to learn through social interactions wherein the consciousness and cognition are the end product of socialization and social behaviour.

■ **Spaced Learning Theory (Hermann Ebbinghaus):**

Microlearning can help commit information to memory with better ease. Because microlearning follows the concept of spaced learning, i.e., learning is more effective, and information is more readily retained if it is spaced out over time. Ex. If a traditional eLearning course of 2 hours is spaced out into 6 modules of 20 minutes each, a microlearning course of 2 hours will be spaced out into 24 modules of 5 minutes each. Spaced learning, according to Ebbinghaus, is more likely to end up in the long-term memory, and thus can be retained and recalled more easily.

LITERATURE REVIEW

In the 21st century the web has evolved from a producer-consumer oriented information source to a social web filled with user generated content. Loss of quality in the learning is a major concern, therefore, the numerous developers are continuously coming up with solutions to ensure content quality on the web (Goschlberger, 2011). Researchers propose to use interaction patterns of successful social networking sites to create a platform that motivates students to create and share learning activities for quality content. Engagement of learners is also significant for better producer-consumer orientation. The success of Microlearning as a pedagogical approach stems from the evaluation of learners' engagement. It is also observed that learner participation is increased through the evolution of microlearning (Bannister, Neve & Kolanko, 2020). The development of regular activities for successful learning experiences in higher education is the most remarkable requirement. As implied by many studies during the COVID 19 period, often, learners are unable to pay continuous attention in the e-learning systems. Thus, it is vital for the teachers and mentors to maintain the engagement or participation of learners during learning through microlearning. Moreover, the micro learning environment is developed with the help of technology which helps enhance learning. Microlearning environments encompass various motivational factors that peak learners' interest and engagement. Basically, it helps in repetitive learning through embedding the learning

process into the daily routine by use of communication devices. Through this method a new learning space emerges and becomes available for lifelong learning (Gerhard, Theo & Christian 2004).

The most stunning factor is that micro learning is able to improve student's learning ability. The problem with traditional learning methods is that the learner's mind is glued in its state, and it does not motivate them to get new knowledge and improve their skills. Microlearning provides a new teaching paradigm which can allow knowledge and information to be divided into small chunks and deliver it to the learners. Microlearning can make the learning subjects easy to understand and retain for a longer period (Gona, Karzan & Sarkhell, 2018). On the other hand, according to a study on various interactive education materials, microlearning was found to be successful in improving the learning of students and to increase learner's enthusiasm (Eser, Ozan & Hilal 2021). These research show that the class using microlearning methods was more useful compared with traditional methods. The results emphasized that the microlearning group showed better learning than the traditional group. Thus, using microlearning techniques, the effectiveness, and efficiency of learning can be improved. Also, the information can be retained for longer periods.

Microlearning is also helpful for continuous professional development, and it provides learners with the flexibility to engage in a number of different learning modalities such as short articles, bite-sized videos or audios, podcasts, blended instructional designs that extend the reach of live educational activities into a succinct video or audio, and illustrative case studies for model clinical decision-making (Dahiya, S. & Bernard, A. 2021). Micro-learning, aligned with formal learning and embedded in online communities, has the potential to support professional development (Ilona, & Hamelmann, 2010). Microlearning is designed to help learners acquire a skill or solve a problem within a short time period. It should be digitally based, skill based, and personalized. Since microlearning is in its early development, a broad range of studies can make significant contributions to this field. Future research can focus on generating quantitative and qualitative evidence to examine the effectiveness of microlearning for professional development in various industries (Zhang & West, 2020).

Microlearning is compatible with mobile learning as both are trying to provide bite-sized content at anytime and anywhere with easy access to the end users to facilitate learning with real engagement. Researchers describe an application for mobile phones and personal computers designed to help users learn via "micro-learning" events (Beaudin, Intille & Morris, 2012). The various devices like mobiles or tablets are helpful for microlearning system and studies have shown that mobile micro learning could not only increase students' performance, achieve-

ment, learning motivation, engagement, professional skills, and knowledge retention but also contribute to the field of just-in-time learning in the workplace so that employees can fit microlearning into their busy work routines anytime using their smartphones (Lee, 2021). Technological innovation and ICT has made our society a well-informed hub through the school education and teacher education (Jadhav, 2011). In such a hub, learners can acquire and utilize the available information quickly for defining their daily problems. Mobile Micro-learning is aimed at discovering new ways of responding to the growing need of lifelong learning or learning on demand for members of our society in the present techno-society. The education industry is regularly updating curriculum to cope with the changing demand of industry and business to meet the challenges in the internal and external environment of businesses (Job & Ogalo, 2012). Subsequently, the exploration of micro-learning is used to organize and order a set of pedagogical and technological phenomena and concepts in new and interesting ways (Luminita Giurgiu, 2017). The micro-learning should not be thought one approach among many, but instead as a perspective that applies to many aspects of education, as something that goes on continuously, since micro-learning have a generalized applicability to the studies of media and technology in education in the broadest possible sense (Theo Hug, 2007).

Hence, microlearning is the demand of the education industry and it will promote quality education at school level and teacher education. The impact of the Fourth Industrial Revolution on education in India is highly noticeable and the principle of connection among the learners in the society due to technology is remarkable for making a knowledgeable society. This has been implied for higher education institutions in terms of planning and preparing learners to not just be prepared in terms of traditional disciplinary requirements but also be able to adapt to the needs of the job market. This is nothing but increasing interconnection among the people and it is an essential element of the fourth industrial revolution (Schwab, 2015).

MICRO LEARNING PLANNER

Creating a Microlearning Planner is a systematic task that includes proper analysis of content, designing of delivery mechanisms, confirming the principles of creation, and planning of execution. Microlearning must meet the specific requirement of the target users. For example, in teacher training, the focus could be the development of the teacher's professional skills.

1. Elements of the Micro Learning

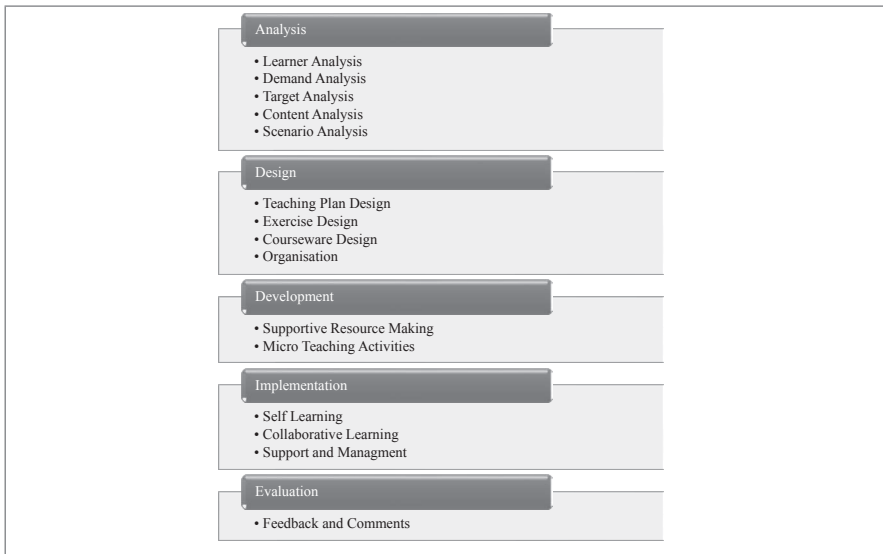
Since each microlearning asset serves a specific objective, the forms they take are diverse and dependent on the intended learning outcome. Common exam-

ples of microlearning objects that can be used across multiple devices such as desktops, laptops, computers, tablets, and mobiles etc. are as follows:

1. Interactive / non- interactive Videos - Using multimedia and developing video is easier to transfer information and create more engaging content for learners. And learners can engage with two cognitive sub-systems: the visual channel and the auditory channel. Therefore, the visual and verbal form of the information is enhanced recall and recognition "...people learn more deeply from words and pictures than from words alone" (Mayer, 1994). According to Cognitive psychology, after three days we retain only 10% of the information we hear, but we have a recall rate of 65% when visuals are added. So, the principle of Micro learning is that small bits of content are retained and internalized better than the longer learning content.
2. Interactive / non-interactive infographics / PDF - Infographics are a combination of visuals and text that simplify complex ideas. They are great for learning material/training material that involves facts, statistics, and trends. Infographics can also act as quick reference tools as they give a general overview of a topic. Using infographics can help make textual content interesting and engaging for the learners. Interactive or non-interactive infographics and PDFs are gaining use as quick and handy resources that are ideal as microlearning elements. Nowadays, PDFs of contents are very easily available and mobile friendly. It can be supported across multiple digital devices for easy circulation.
3. Gamification - Gamification based techniques can be applied across all teacher training needs. A well-crafted Gamification for serious learning will help you achieve the objectives of the teacher training or classroom teaching. Learning through Gamification can help achieve fast completion of a task and it makes learning not feel like learning. Learners are drawn to Gamification as it makes learning fun and features rewards and recognition -that all of us love! Combined with microlearning, this approach offers learners a "bite-sized" Gamification experience.
4. Mobile – Microlearning on a mobile device means micro lessons can be completed anywhere, anytime, and importantly at a learners' own pace. The combination of Mobile learning and microlearning provides a deeper understanding of the content and the most beautiful thing is that it can be consumed anytime and anywhere. Learners prefer these formats, and this leads to higher completion cycles. Mobile learning makes great companions, and you can use them to multiply the impact of your training delivery. Short nuggets (Microlearning) can be taken on the go (on smartphones or tablets that are an integral part of Mobile learning).

5. Peer Learning or collaborative learning - It can be helpful when a learner needs to master a competence or new skills. Through the principles of micro learning, a learner can achieve a goal with the help of peers in a short time or with short content. Watching how a peer completes a task while hearing that co-learner explain their process is a form of highly relevant context-based learning.
6. Keeping it Short - Breaking complex content into multiple courses or in lessons so they can address one chunk at a time. This kind of chunk content defines how to deliver a quantity of knowledge and information, structured in several short chapters, fine-grained, well-defined, and interconnected. Micro-content refers to information whose length is determined by a single topic, content that covers a single idea or concept and is accessible via a single URL, being suitable for presentation in handheld devices, emails, web-browsers. Thus, micro-content is the part that integrates into micro-learning (Giurgiu, 2017).
7. Reinforcement / Rewards - Rewarding can be implemented by offering rewards to those who complete the course as quickest. This kind of reward gives motivation for further learning.
8. Graphical User Interface - The GUI is the point of interaction between learners and the content that you have created. Its facilities interaction and enables navigation through the learning resource using items such as icons, menus, and controls. It is therefore crucial to pay attention to the design of the GUI, as it will have a major impact in determining the success or failure of the microlearning content. Common features of a GUI will often include next and back navigation buttons, menu-based navigation, audio controls, closed captioning controls for accessibility, contextualised help button, and exit/close buttons.
9. Rapid Authoring - Teacher can distribute the content at a fast pace while managing the logical sequence among the learners.
10. Competition and Leaderboards - Add a competitive element to training with leaderboards showing the best performance.
11. Cloud Based Translation - Translating eLearning courses into multiple languages are time consuming and expensive. With microlearning, it can be easily translated and will be available to all the learners. Because of cloud systems, any device is connected anywhere and anytime and learners can learn content in the languages of their choice.
12. Moodle Quiz / Google Forms - In micro learning, the assessment of learners also takes place. Moreover, formative assessment is most important in microlearning. At that time, teachers can use Moodle quiz or Google form for assessing their learning.

2. Model for Creating Micro Learning Planner



Source: *Introduction to Microlearning, CoL, 2021*

2.1 Analysis: Before starting to create the microlearning planner, as a teacher, we need to conduct detailed analysis of some important element i.e., learner, their demand, content and content learning objectives, their scenario etc.

- **Learner Analysis:** Due to individual differences, learners possess unique learning preferences. It is imperative to understand who they are, including aspects such as age, gender, socioeconomic status, experience, and education level.
- **Demand Analysis:** Adult learning is demand-centred. It is crucial to understand the learners' learning requirements in order to ensure that the micro-lesson will stimulate motivation and meet their learning needs.
- **Goal Analysis:** This is to determine the goal(s) that teachers should achieve at the conclusion of the learning activity. The goal(s) should be communicated to everyone who is involved in the creation of the particular microlearning lesson. These goals must be SMART [Specific, Measurable, Achievable, Relevant, and Time-Bound].
- **Content Analysis:** The teacher or mentors should align the course content to the learning goals and devise ways of chunking the content into reasonably small units. The available learning materials should be aligned with decided content.

- **Scenario Analysis:** This involves assessing the learning environment in order to consider the tools to use, platforms to avoid and potential challenges that the teachers may encounter in application/demonstration of knowledge, as well as other physical and organizational constraints that may impact learning. Some questions that teachers can ask themselves while designing microlearning modules are: In what setting will the learning take place, and would it influence the efficacy of microlearning? What are the technical requirements of the course?

2.2 Design: This stage is focused on the microlearning objectives, assessment instruments, exercise design, lesson plan design, content, and media selection. The teacher or mentor should fully understand the curriculum objectives in order to create informed documentation. Documentation in this case refers to microlearning teaching plans, storyboards, scripts, and the selection of appropriate media for microlearning objects.

2.3 Development: At this point, the content outlined in the design phases is assembled and/or created. For example, videos are produced (shot, recorded and edited) or animations and infographics are created, depending on the type of microlearning object being developed.

2.4. Implementation: At this stage, microlearning lessons are packaged to be uploaded to the relevant platforms, such as USB, DLMS and social media platforms, etc.). The decisions made in the design phase will largely influence this implementation phase. It is important to ensure that the content works and displays correctly before teachers commence learning. So, conducting a pilot course is a useful exercise. Once the microlearning lesson is uploaded, teachers can access the microlearning resources and take part in the course activities and also provide feedback to the trainer.

2.5 Evaluation: Evaluation of the individual microlearning lesson consists of both formative and summative evaluation. Formative evaluation is present as reflection in each stage of the process while summative evaluation consists of specific design features to get feedback from the users. Teachers who are part of the microlearning lesson should be able to evaluate the content, its design, and process against their own experiences in order to review whether the lesson has achieved set goals.

3. Steps of Implementation

The implementation is a very crucial phase, and it is important to ensure that the content works and displays correctly before teachers commence learning. The steps in the implementation as follows...

- Step1– Selection of the Content

In the Micro Learning Planner, the teacher (mentors) should align the course content to the learning objectives. The learning materials are available in different forms, but the teacher or mentors should identify it properly and make the final selection for micro learning i.e. all content is not always useful for microlearning.

- Setp2 – Classify of the Content

Content is playing a vital role in the microlearning planner. Therefore, selection of the content is basic then the content should be classified into different parts. Actually, the arrangement of content or classification of content is also important in microlearning. It has been organised as follows:

- Principles: A teacher or mentor can identify the principles of the selected content; this will be one chunk of the whole content. All the principles of the content should be elaborated analogy or local contextual practices or examples.
- Procedure: Some content carries their importance with their procedures so a teacher should be able to find out the decided procedure or need to modify or develop the particular procedure of the content. So, this kind of selected content will be easily delivered to the learner through any Digital Learning Management System (DLMS).
- Facts: The selected content in micro learning definitely carries some facts, a teacher can be drawn out the facts of content. This is a very tedious job of identifying the facts of particular content, because teachers should be using all the learning materials.
- Concepts: The contents are always free to be separated and can form any new pattern (Sánchez-Alonso et al., 2006). Sometimes the content includes many more concepts, therefore a teacher or mentor can identify all kinds of concepts from the selected content. All concepts are very attractive because they are also individually addressed and referred to by sets of formal metadata.

- Step3 – Chunking of the Content

Micro-learning is often referred to as “bite-sized” because the content is defined in small chunks that usually last no longer than a few minutes (30 seconds to 10 min). The way micro-learning addresses short size of learning content that is made up of fine-grained, interconnected and loosely coupled short learning activities, determines the focus on the individual learning needs. The design maxim “less is more” is applicable in the chunking process. Instead of cluttered information, the teacher chunking the content, and this will increase the efficacy of a microle-

arning lesson. Keep supporting materials such as sounds, graphics and effects to a minimum, and only use them when they serve to reinforce learning.

- Step4 – Compute the Content

In this step, a teacher organises the chunked content into logical flow. Main/critical information has to be in front and centre in micro learning flow, while additional information should be made discrepancy as per the needs of learners. Each chunk or learning block should be consumable with main/critical information and additional information.

4. Framework of Microlearning Planner

Below is a framework on how to structure each microlearning lesson and example microlearning objects for each structural element:

Framework of Micro-Learning			
Sr. No.	What-structural element	How-instructional method	Medium-microlearning object
1.	Welcome to the Lesson	Structured overview	Video
2.	Tap on the prior knowledge	Inquiry Drill and Practice	Survey on Moodle Quiz
3.	Review key points	Mental modelling Discovery learning	Infographic
4.	Content	Direct instruction Lecture Drill and Practice	Video Infographic Interactive PDF
5.	Discussion	Reflective Discussions Group Discussions Debate	Discussion forum in DLMS Social Media Post
6.	Review Key Points	Questions and Answer Inquiry	Video Infographic
7.	Assessment	Quiz	Moodle Quiz Google Forms

Source: *Introduction to Microlearning*, CoL, 2021

The above framework is useful for a teacher or mentor for making lesson plans. There are several examples given regarding the instructional method and micro learning objects. When implementing microlearning, there are many risks/challenges that should be considered i.e., the casual attitude of learners, technology barriers, content fragmentation etc. These can be some challenges, but the teacher can minimize such barriers with their experience and available resources.

CONCLUSION

The major benefit of the Micro Learning Planner is to enhance the learning among learners of any level and it can help in developing a learning environment, which would improve the learner's level of self-concept as well as learners' interactions. Micro learning planner increases the level of knowledge and understanding and its moves towards application. In fast moving learning areas, information sources and information units are available in large scale, therefore, the microlearning planner is trying to apply for rapid development and a constantly high degree of changes among learners in the field. The main characteristics of the Micro Learning planner is that it is flexible for delivery of content and pointing to the speedy development process. As a teacher, it is a meaningful input opportunity for developing your own content with the help of mobile or low-cost gadgets. It is also showing clear advantage when designing a comprehensive instructional design strategy to address identified needs. Teachers as well as learners have busy schedules and heavy learning loads that include teaching and curriculum-related activities. In that situation, a micro learning planner will definitely be helpful to teachers for maintaining the learning interest of the learner in the respective subjects or courses. In addition, today, teachers have social responsibilities, which may take up most of their spare time. Thus, the traditional long format of lesson plan is not up to the mark and effective so that a micro learning planner is able to achieve the expected results and outcomes with better ease in a short time.

APPENDICES

Template for developing a microlearning planner

Micro Learning Planner**Subject:****Date:****Chapter name:****Time:**

Learning outcome of the chapter

Sub-division of the chapters:	Sr. No.	Section of the chapter		Learning outcome
	1			
	2			
	3			
	4			
	5			
	6			
	7			
Section 1	Principles [what]	Procedures [how to]	Facts [what is]	Concepts [why]
Section 2	Principles [what]	Procedures [how to]	Facts [what is]	Concepts [why]
Section 3	Principles [what]	Procedures [how to]	Facts [what is]	Concepts [why]
Section 4	Principles [what]	Procedures [how to]	Facts [what is]	Concepts [why]
Section 5	Principles [what]	Procedures [how to]	Facts [what is]	Concepts [why]
Section 6	Principles [what]	Procedures [how to]	Facts [what is]	Concepts [why]
Section 7	Principles [what]	Procedures [how to]	Facts [what is]	Concepts [why]

Selection of delivery mode:

Sr. No.	Section	Mode
1		
2		
3		
4		
5		
6		
7		

Compute the content [what will the logical flow in which you will teach]:

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

REFERENCES

- Bernhard Goschlberger, (2011). A Platform for Social Microlearning. Reserch Studios Austria FG, Linz, Austria.
- Borko Hilda, (2004). Professional Development and Teacher Learning: Mapping the Terrain. Educational Researcher, Vol.33, No. 3-15, 2014, American Educational Research Association.
- Dahiya, S. & Bernard, A. (2021) Microlearning: The Future of CPD/CME, Journal of European CME, 10:1, DOI: 10.1080/21614083.2021.2014048
- Eser Yıldırım Sözmen, Ozan Karaca & A. Hilal Batı (2021) The effectiveness of interactive training and microlearning approaches on motivation and independent learning of medical students during the COVID-19 pandemic, Innovations in Education and Teaching International, DOI: 10.1080/14703297.2021.1966488
- Glahn, C. (2004). Integrated Micro Learning An outline of the basic method and first results. International Conference.
- Gona S.M., Karzan W., Sarkhell S.N., (2018). The Effectiveness of Microlearning to Improve Studnets' Learning Ability. International Journal of Educational Research Review, 3 (3), 32-38
- Guskey Thomas R., (2002). Professional Development and Teacher Change. Teachers and Teaching: Theory and Practice, Vol. 8, No. 3/4 , 2002, Carfax Publishing.
- Goschlberger B. (2016). A Platform for Social Micro-learning, Johannes Kepler University, Linz, Austria

- Ilona Buchem, Henrike Hamelmann, (2010). Micro-learning: a strategy for ongoing professional development. University of Applied Sciences, Berlin.
- James Bannister, Mia Neve & Celeste Kolanko (2020) Increased Educational Reach through a Microlearning Approach: Can Higher Participation Translate to Improved Outcomes?, *Journal of European CME*, 9:1, DOI: 10.1080/21614083.2020.1834761
- Jennifer S. Beaudin, Stephen S. Intille & Margaret E. Morris, (2012). Micro-Learning on a Mobile Device. Massachusetts Institute of Technology, Massachusetts Avenue, Cambridge.
- Job M.A. & Ogale H.S., (2012). Micro learning as innovative process of knowledge strategy, Faculty of IT, Arab Open University, Kingdom of Bahrain.
- Luminita Giurgiu., (2017). Microlearning an Evolving eLearning Trend, *DE Gruyter Open Scientific Bulletin*, Vol. XXII No. 1 (43).
- Mali M., Sonawane S. & Jadhav. V. (2021). Micro-learning(ML): An effective way of learning in teacher education, *Zeichen Journal*, ISSN: 0932-4747, Vol. XII, Issue. 7, Page No. 101-108
- Mali M., Sonawane S. & Jadhav V. (2021). Micro Learning Strategies for Professional Development of Teachers in Higher Education Institute, *Education India Journal: A Quarterly Refereed Journal of Dialogues on Education*, ISSN 2278-2435, Vol. 10, Issue- 1.
- Theo Hug, (2007). Outline of a Micro-learning Agenda, University of Innsbruck, Austria.
- Yen-Mei Lee (2021) Mobile microlearning: a systematic literature review and its implications, *Interactive Learning Environments*, DOI: 10.1080/10494820.2021.1977964
- Zhang, J., West, R.E. (2020) Designing Microlearning Instruction for Professional Development Through a Competency Based Approach. *TechTrends*, 64, 310–318. <https://doi.org/10.1007/s11528-019-00449-4>
- Haipinge, Erkkie & Olivier, Jako. (2019). Paving the way towards success in terms of the 4th Industrial Revolution: The affordances of multimodal multiliteracies.
- Jadhav, V.(2011).“ICT and Teacher Education” *International Educational E-Journal*, vol 1, no 1, pp. 64-69

Weblinks:

- <https://www.edapp.com/blog/cognitive-learning-theory/>
- <https://learningsolutionsmag.com/articles/darwin-would-approve-levels-of-learning-adaptation>
- <https://newlearningonline.com/new-learning/chapter-6/supporting-material/lave-and-wenger-on-situated-learning>
- <https://elearningindustry.com/discovery-learning-model>
- <https://esteemjourney.com/wp-content/uploads/2018/07/Social-Development-Theory.pdf>