



Microlearning Practices In Blended Educational Contexts: A Qualitative Study

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ABSTRACT

On average, the modern learner is believed to check one's mobile screen nine times an hour. Post-2020, online education has become the most experimented phenomenon with newer forms of pedagogical paradigms emerging consistently claiming better efficacy than the previous one. Mobile learning facilitates flexibility and convenience unlike any other and has made unending possibilities in teaching, assessment and learning. One such attempt is the need to re-engineer the desired content as micro-modules (three to five minutes of video content, shorter nuggets of information to read, quick quizzes and elements of social learning like discussion forums) that can aid learning through mobiles. Microlearning Instructional Design calls for overhauling current e-learning practices considering the specific content and the target learning outcome. To create a purposeful microlearning experience, it is necessary to incorporate a variety of mediums and timeframes of chunked content. Hug's (2007) three levels of instruction: macro (program level), meso (curriculum level), and micro (bite-sized within a module) posit microlearning as bite-sized information which can be learnt at short bursts and retained by learners through repetition. This paper presents a case of learning conversational skills speaking in English among 60 first-year learners pursuing Electronics and Communication Engineering at Anna University. The instructor's efforts to integrate microlearning practices in the classroom through appropriate instructional design are documented. Learners' perceptions are qualitatively analysed to measure the efficacy of microlearning as part of online out-of-classroom learning. By highlighting the big idea using images and texts, learner interest and involvement are enhanced and even granular objectives can be achieved by infusing differentiated instructional techniques. Factoring the heterogeneity of the classroom, the content is re-engineered and segregated into need-to-know and nice-to-know categories which open options to learners who seek additional support.

Introduction

The ubiquitous nature of the internet and hand-held devices have revolutionised vital human activities like those of education and communication. These handheld devices, mobile phones, in particular, have become indispensable as they are multipurpose in usage. All age groups are now well aware of how to use it efficiently for their custom requirements and have consequently been an enabling factor to overcome several challenges in everyday life. The way one is entertained has also, in recent times, influenced how one prefers to learn. It has been noticed that short bite-sized content, especially video content draws the attention of users in general and teenagers in particular. Entertainment platforms have initiated or overhauled their products to satisfy this need of the customer or subscriber, who is considered to be a key stakeholder in the entire process. Moreover, these devices keep evolving with time offering many services that become inevitable for any given user. They are perfected and aligned to the needs of the user and thereby open up a world of opportunities to any user.

Knowledge workers (Tapscott, 2006), digital natives, digital immigrants (Prensky, 2001), new millennium learners (OECD, 2006), and the Net Generation (Oblinger & Oblinger, 2007) are phrases that describe how we work and study today. The Internet and related technologies are heavily influencing the way of life of a new generation, those born after the 1980s, but also of earlier generations. Both younger and older students bring laptop computers to class or business meetings, utilise mobile phones and the Internet to nurture social

networks, use digital devices to play games and generate content, or multitask by engaging in many tasks at the same time (Roberts, 2010).

Short content especially videos has been proven to be the most consumed on any web platform among teenagers. The creation and curation of such content have also become comparatively easier facilitated by a plethora of tools available freely both to teachers and to students. Thus, in the educational scenario, ed-tech offers a win-win situation for learners and teachers when used in a contextualised manner. Of the various methods and strategies one can permutate to teach language skills with the available web tools, microlearning becomes both a possible and highly efficient model to impart skills within the realm of English Language Teaching. When executed in a well-planned and phased manner, microlearning has proven to be beneficial to the present generation of learners who have access to such technologies and are naturally inclined towards digital engagement. The Digital 2021: Global Overview Report has found that a user of modern gadgets spends more than 4 h a day on a smartphone, and a user of social networks spends 2 h and 25 min every day on these platforms (Digital 2021: Global Overview Report). While users are online, instead of reading large chunks of text, short videos of less than 10 minutes are most accessed on a given topic is another finding of the study.

The post-pandemic classroom is a rich site of experimentation in which usage of the Information and Communication Technology (ICT) tools is easier than in the pre-pandemic situation. The research trends in education in any field, in recent years, have indicated that content, form and media used for content delivery play an important role in enhancing student retention of the target learning chunk. (Halvoník & Kapusta, 2020; Sharma et al., 2012). According to these requirements, many pedagogical frameworks have been designed and developed for experimentation, implementation and optimisation. Individuals become actively involved in the co-creation of cultural assets beyond formal structures, changing from consumers to producers, thus becoming so-called prosumers (Toffler, 1980; Bowman & Willis, 2003; Kuhlmann & Sauter, 2008), as a result of Web 2.0 technologies. These new digital tools that enable the development of user-generated content have fuelled a movement toward microformats, or short, simple, and focused information (Allsopp, 2007; Masie, 2006).

Understanding Microlearning as an Effective Pedagogical Strategy in the Online Learning Context

Lindner (2004), an Austrian professor, coined the phrase "micro-learning," and since then, studies on it have grown steadily throughout the world. From 2005 through 2013, the University of Innsbruck in Austria hosted seven sessions of an international conference on micro-learning, where the use of micro-learning in diverse sectors was explored and discussed. Micro-learning has been studied for more than a decade and has progressively become a popular research area. With the advent of personal publishing platforms such as blogs and wikis, it has become very simple for anybody to generate their own material, including microcontent. Microcontent, or information presented in short form, is more concerned with a formal approach to how to convey content than with the underlying quality of the material itself (Mosel, 2005; Lindner, 2006). Podcasts, blog entries, wiki pages, and brief messages on Facebook or Twitter are all examples of microcontent. Creating, distributing, and sharing microcontent on the Web opens up new opportunities for implicit, informal, and accidental kinds of learning, such as microlearning (short learning exercises with microcontent) (Lindner, 2006; Robes, 2009; Hug, 2010).

Microlearning is considered part of a dynamic, open, and fragmented digital world in which micro chunks of knowledge may be created, gathered, utilised, and reused separately (Lindner, 2006). Microlearning based on Web 2.0 apps is embedded in a complex digital ecosystem made up of extremely small, weakly connected parts that are constantly rearranging to produce volatile (micro-) knowledge clouds (Lindner, 2006). Active engagement of learners in the process of co-creation and dissemination of microcontent is an important component of Web 2.0-based microlearning.

Microlearning is also strongly connected to informal learning, particularly in terms of learning context, degree of organising, and format (Robes, 2009). Microlearning and informal learning both occur outside of established organised contexts, such as digital and micro-media environments (Lindner, 2006). Short microlearning exercises with durations ranging from a few seconds to around 15 minutes may be readily and flexibly integrated into daily activities. Microlearning may easily be utilised to facilitate on-demand and in-between learning since it does not need large attention spans or long-term participation of the learner. Microcontent as input and output of micro-learning may be developed and used in the shift from learning communities to learning networks via communities of practice, bridging the gap between formal and informal learning (Kuhlmann & Sauter, 2010). As small exercises may be readily integrated into daily activities, microlearning promotes self-directed lifelong learning. Phased learning steps containing small pieces of information can be employed for on-demand and in-between learning. Microlearning, in this way, allows people to stay current in today's knowledge culture and serves as a suitable supplement to more time-consuming and institutionalised ways of learning, such as classroom courses or web-based training. Thus, as a collection of educational technologies, microlearning has three basic features (Buchem & Hamelmann, 2010): brief length of educational content units; concentration on a specific learning result, content granulation; and multiformat and multiplatform.

Benefits of Micro-learning among Adolescent Learners

Microcontent is defined as short bits of information that focus on a single distinct concept or topic content that learners co-create utilising Web 2.0 and quick e-learning technologies. Microcontent units are self-contained in the sense that they may be comprehended without more information; microcontent cannot be broken into smaller parts without losing meaning. Learners develop dynamic, flexible structures while learning through syndication, aggregation, and alteration of data such as social tags and bookmarks. Learners are content consumers and gradually become prosumers, constructing their own mental structures via exploration and social interaction. In addition, microlearning has the following notable features:

- It is short, concise and focused, and it can be consumed on the move.
- It is present in the learners' daily workflow and may be accessed whenever they need it.
- It is built for multi-device compatibility and gives learners flexibility over when and how they consume it.
- It employs engaging and immersive high-impact mediums (particularly videos).

The Current Research Context

According to English Second Language Pedagogy and its research, the measure used to understand a learner's competency in the English language is heavily influenced by the learner's ability to communicate effectively. Effective speech facilitates transactions in professional communication, hence speaking fluency in English is critical in determining one's academic and professional talents. Many experts have emphasised the importance of conversational skills that encompasses several smaller components like introducing asking questions, turn-taking and non-verbal components as well. The participants of the research study ($n=60$) are in the first year of their four-year professional course of engineering graduation specialising in Electrical and Electronics Communication Engineering at Anna University, Chennai, India. The students require efficient conversational skills to socialise in and out of the campus as many have relocated from different regions including rural pockets of the state to the university which is now in an urban setup. As a cognitively demanding skill and the most significant trait in academic settings, companies endorse that English speaking plays an undeniably vital role in creating one's professional profile. Students were also informed about the research study and the requirements for data collection for which oral consent was obtained and all the students agreed to be part of the study as they understood it would be beneficial for them in developing their conversational skills.

A Critical Overview of Literature

Dewey (1910) developed a philosophical basis for chunked learning. "Concentration does not imply fixity, nor a constrained stop or paralysis of the flow of idea," he wrote. It denotes the combination of variation and change of ideas into a single continuous trend heading toward a cohesive conclusion" (p. 10). He went on to explain how an iterative process of reflection might be used to improve learning. Decades of research and the use of reflective methods in teaching and learning have supported this concept (Dewey, 1933). The use of microlearning methodologies in conjunction with self-learning for interactions and engagement to improve teacher instructional design and delivery abilities is effective. The utilisation of mobile technology to distribute chunks of material, as well as self-learning technologies that provide asynchronous and synchronous chances for learners to connect with one other and with the learning, is a vital component of any microlearning initiative's success.

Downs (2005) opines that with this approach to learning, learning information is developed and disseminated in a fundamentally different way. E-learning information, like a blog post or podcast, is syndicated rather than written, arranged, and packaged. Students aggregate it using their personal RSS reader or a similar tool. The final result is passed forward to become fodder for some other students' reading and usage. The didactical design of microlearning includes not only the creation of microcontent but also the creation of microlearning activities that are based on microcontent and result in microcontent. As a result, microlearning poses additional concerns about the didactic design of learning activities (Lindner, 2006).

The tiny format does not imply that teaching tactics are simpler. On the contrary, when diverse didactical techniques are integrated, building microlearning scenarios become even more complicated (Kerres, 2007). Current approaches to microlearning emphasise the importance of learning environment permeability, microcontent aggregation, modification, distribution, personal engagement and contribution, participation in individual and social learning activities, social group processes, community building, and collaboration (Kerres, 2007). Several pedagogical strategies, particularly self-directed learning (e.g. Knowles, 1975), situational learning (e.g. Lae & Wenger, 1991), and community-based learning, can be combined to enhance microlearning (e.g. Wenger, 1991). Encouragement of co-creation and sharing of material can be directed by collaborative learning concepts and media design models such as process-oriented approaches to media production and interchange (Davenport, 2004).

Learning processes should be structured as situational, emergent activities, with the understanding that they can be prepared but not predetermined (Kerres, 2007). The learning process may be arranged as a series of microlearning sessions, with each session lasting around 15 minutes. A microlearning cycle can be separated into loosely related parts, such as (1) introduction (subject overview, problem definition, task description); (2) activity (exercise, problem-solving, text-writing); and (3) closure (discussion, reflection, feedback). Furthermore, microcontent units can be allocated to distinct subtopics to assist learners in organising their learning, allowing for individual microcontent aggregation and sequencing. Several studies in neuroscience

have discovered that practise over long periods of time is required to establish long-term memories (Doyle & Zakrajsek, 2013). Because microlearning may be applied in practical contexts, the learner can receive a fast microlearning intervention and instantly practise the idea. These training methods are brief and affordable, and when combined, they provide multimodal teaching (microlearning). Mohammed et al. (2018) concluded in their study that employing microlearning might boost learning capacity by up to 18% when compared to standard forms of learning methods.

According to the research in this study, some noticeable similarities among these microlearning research studies include short duration, clear and succinct information presentation, simplicity of use and accessibility, user-driven material, and a concentration on a particular topic or concept. However, in the Indian context, especially in the realm of speaking skills, the strategy of microlearning has adequate potential to be experimented with and documented.

Methodology

The study employs a mixed-methods approach in which both quantitative and qualitative data were collected and analysed to interpret the positive impact of the microlearning technique on the participants. Foregrounding a single-group experimental approach with a pre- and post-test model to evaluate the efficacy of the intervention, the study was conducted over a period of three months in addition to the classroom learning hours. In addition, the following aspects were also forethought in detail before designing the intervention

- the duration - according to previous research available in this area, microlearning can last anywhere from a minute to fifteen minutes or more;
- the time of day, as well as if weekends should be included;
- deadlines: setting deadlines kept students engaged without leaving all tasks or exercises for later completion;
- the type and amount of learning activities;
- revision and consolidation frequency;
- feedback organisation;
- the structure of each microlearning activity; and
- the platform on which the experiment was conducted.

A pre-experiment survey was conducted, containing questions concerning students' preferred number of learning activities, timeliness, and preferable period of the day for such activities, which is key, since assignments provided to students during their study period at the university are most of the time left incomplete due to other more pressing academic commitments. The results of the survey found that about 91% of respondents were eager to invest time in honing their conversational skills by engaging in a learning process in addition to classroom activities. 87% of the respondents believed that learning in small chunks at a consistent rate (twice a day) over a period of time (3 months) will help them achieve their target. A diagnostic test was conducted before the experiment began to determine the English Language Proficiency levels of the participants using the Council of European Framework of Reference (CEFR) which is a standardised tool to examine all four language skills including listening, speaking, reading and writing. The student profiles were accordingly created and the content was curated accordingly, targeting the learning outcome – speaking in general and conversational skills in particular. Over a period of three months, learners had access to the LMS via MS Teams through which microcontent was shared regularly as planned earlier by the instructor of the course. The instructor is also the researcher in this context thereby facilitating the monitoring of the entire process thoroughly. Learners were also comfortable in making enquiries as required as they had direct access to the teacher on the campus. Moreover, the class WhatsApp group was used for sharing the microcontent in addition to alerting and reminding the learners to check the content as scheduled.

After the experiment was carried out using the intervention designed a Likert-type rating scale was used to create the self-developed survey items to find out the efficacy of the learning process. To avoid implying that there were proper answers to the interviewer's inquiries, the interview methodology employed semi-structured open-ended inquiry. The researcher was looking for the respondents' real points of view. The researcher triangulated the study findings with the literature in order to reflect earlier studies' findings and reinforce the validity of the data-driven conclusions.

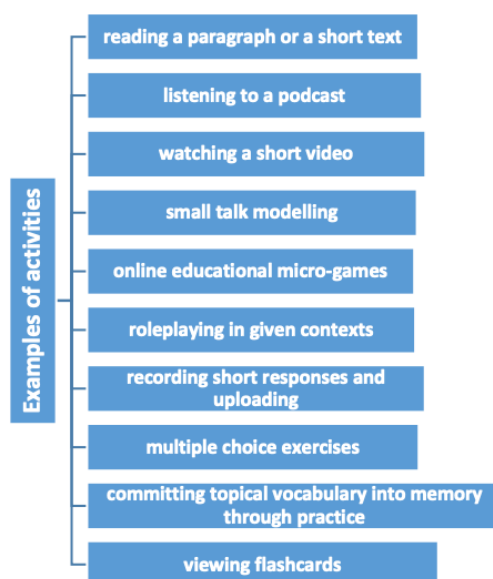
The system MS Teams, including MS services, was chosen as the primary platform for the whole course. Most activities' tasks were generated in MS Forms. The pupils' grades were instantly put into the MS Teams grading system. Students were provided with a Kahoot or Quizziz game at the end of each conversational skill module to infuse a competitive atmosphere into the process of intervention. Despite the fact that the service is incorporated in MS Teams, the results must be manually entered into the course's grading system. MS Stream was employed for video lectures, screencasts, and listening assignments. The ability to insert MS Forms tests within the short video itself was the service's key advantage. In this manner, the video could be paused as desired by the learner.

Materials used for the Study

Having established the perceived needs, benefits and importance of microlearning, certain major principles of the microlearning framework along with multiple intelligence styles of learning were considered before designing the microcontent. The following modes of information perception were also factored into the microlearning model.

- Auditory Learning: All lectures should be in audio format: this might be screencasts or audio podcasts, which on the one hand is better received by people who are visual, and on the other hand, students get a sense of the tutor's presence by hearing his voice or meeting them in person, as well as invites to debate study materials in forums, online conversations, and chat rooms.
- Visual Aid: For greater retention of students' memories, all content should be supported by supplementary visual support. Learners will benefit from mind maps, infographics, images or screenshots, infographics or graphs, tables or drawings.
- Modular instruction: Each module is broken into shorter blocks of information, which aids in remembering.

Examples of activities



Every microlearning activity included a short instruction on how to do the task or an explanation of theory; a drilling exercise was given in cases of grammar and vocabulary in use; and reading and listening activities contained a short text for reading and comprehension tasks based on the type of reading skill developed.

Discussion

The

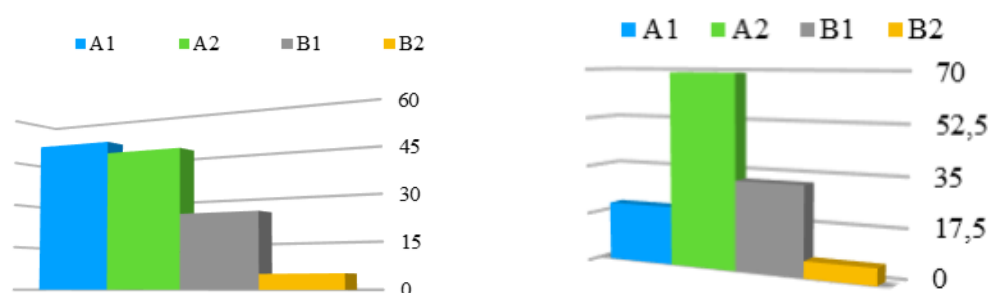


Fig. 1. The CEFR proficiency level of the participants in the pre and post-test (results)

The qualitative data content analysis began with reviewing the interview transcripts and open-ended survey responses to gain a basic overview of the participants' responses and to redact any identifiable information supplied by the participants. The first author conducted a second, more in-depth reading to find specific ideas, words, and phrases for coding that mirrored the meaning of the participants. A third reading gave code groups and emergent themes from those codes. The most difficult obstacle was determining how many assignments to offer each day so that pupils were not overburdened with responsibilities and did not miss them. The findings obtained thus far indicate that pupils' language levels are steadily improving. The summative examination at the conclusion of the course revealed changes in the general students' language level.

It should be mentioned, however, that creating deadlines was a vital aspect of the course since without them, students abandoned all assignments until the last day (weekend) and the experiment's goal could not be met. The second task was to determine how much knowledge could be provided in a single session. Though the literature suggests that a single session can run up to 15 minutes, we determined that the timing was determined by the day of the week, the content given, and the language level. Second, it was critical to keep the information gap around 20/80 to avoid making the frame too long.

The briefness of microlearning may be the underlying explanation for these positive benefits of microlearning on student performance. Though some researchers have suggested differently (e.g., Bradbury, 2016), many have claimed that the human attention span is rather restricted (about 10-15 minutes) (e.g., Davis, 1993; Hartley & Davies, 1978; McKeachie & Sviinicki, 2006). According to Kulhavy et al. (1986), attention is required for a particular piece of information to be processed and remembered. As a result, when classes are brief (5-10 minutes), learners are more likely to stay attentive during the course. As a result, the efficacy of learning is likely to improve.

Findings from the semi-structured interviews

Microlearning has been proven to boost students' perceived confidence in their performance (Hesse et al., 2019; Pascual et al., 2018), perception of improved quality of life, and reduced worry about their health issues (Han et al., 2015). In some respects, these outcomes are less palpable than task-based metrics or knowledge-based evaluations. Their effects, on the other hand, provide a degree of self-awareness and attitude that is related to essential metrics, particularly engagement and motivation. We also noted that in these respective research, students' response rates or usage rates (the skills or toolbox the microlearning courses were teaching) were typically high, which may show the beneficial consequences translated from effective learning of the topics. Further investigation into the possible impacts of microlearning on learner performance is warranted. The study's findings can be corroborated with earlier research undertaken in this area. It was also discovered that the majority of microlearning implementations were employed as supplemental rather than the primary or only learning component in the facilitation of student learning. More interestingly, systems that employed microlearning as the only learning format appeared to have lower levels of user satisfaction than those that used microlearning as part of a wider learning programme. This conclusion might be explained by the fact that bigger learning programmes give more resources, support, and feedback for a more complete learning experience than programmes where the microlearning component was the main learning mode. In terms of knowledge-based results, micro-learning outperformed standard instructional techniques. In some circumstances, students who received microlearning instruction retained and learned more than their peers after the learning intervention.

Another finding from this research showed that students were enthusiastic about microlearning. The short duration of microlearning may help to explain this outcome. We suspected that an implicit underlying variable was at work in this situation. As contemporary social media culture and internet user habits have affected people's informal learning practises, people's everyday lives are filled with short and rapid educational pieces from social media. Viewing You-Tube-style videos to learn how to complete a chore has become a popular approach for many individuals to learn on their own. These information-seeking and consuming activities may inadvertently impact learning mode choices by creating a culture in which learners draw the knowledge and information they need when they need it. Microlearning is consistent with this new casual learning culture, which may explain some of the students' high acceptance rates. As a result, if the microlearning format is compatible with informal learning habits and the information-seeking/consuming culture, instructional design researchers, educators, and trainers may need to investigate the benefits of microlearning further. This instructional strategy is capable of fully using informal learning cultures and transferring them to the contexts of classroom language skill training or formal academic learning.

Limitation

These encouraging findings are based on a smaller sample size and cannot be considered definitive. Furthermore, the evaluation of conversational skills has not yet been completed for all students as planned at the beginning of the study. However, these early findings provide a first glimpse into how young learners perceive microlearning. According to our findings, young learners may readily incorporate microlearning into their daily activities at school and at work to enhance their official education. The majority of participants indicated that the virtual study group was really beneficial for exam preparation. However, getting students to work together proved difficult.

Conclusion

Traditional instructional approaches are frequently insufficient for ongoing skill update and upgrade since they are laborious and constrain learners to specified and closed systems (Fiedler & Kieslinger, 2005). Microcontent and microlearning, as improved by Web 2.0, offer a potential answer to today's fast-paced and multitask-oriented patterns of learning and working, enabling learning in short stages and with small units of content via social interaction. Microlearning incorporated in online communities and matched with formal learning has the potential to assist focussed skills in second language learning. The study has demonstrated that the most

successful use of technology results from a competent methodological formulation of the learning process that takes into consideration the principles and characteristics of microlearning technology.

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