

Contextualizing the Principle of Microlearning to Design Microcontent for English Language Teaching in Post-Pandemic Education

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Abstract: Microlearning is a challenging approach in education. However, the way to develop microlearning-based learning material may be unclear. This study was purposed to, first, transform the principles of microlearning into the guiding descriptors of microlearning-based instructional material for English language learning. Second, the study explored the relevance of microlearning-based learning object materials for post-pandemic English language teaching. This highlighted the potential of microlearning for alternative English language teaching and learning in the digital era of post-pandemic. This study was qualitatively approached by employing library research to answer the research questions. This study began by reviewing academic literature regarding the principle of microlearning, the principle of material development, and the principle of language learning. Then, in the next phase, were three explorations of language teaching before the pandemic, during pandemic and post-pandemic. The result of the study revealed the guiding descriptor on procedure on how to develop microlearning-based material for language learning. The result also exposed the relevance of the implementation of microlearning in post-pandemic education.


1 INTRODUCTION


Microlearning is relatively novel compared to microteaching. The term microteaching was introduced by Allen and Eve in 1963 as a reduced class size and time teaching experience (Allen & Eve, 1968). Then, it developed as a method to educate pre-service teachers (Belt & Baird, 1967; Kallenbach & Gall, 1969; Schaefer & Stromquist, 1967). Meanwhile, microlearning as a counterpart term of microteaching was less known until 2005 (Swertz, 2005). Microlearning was introduced as a new challenging approach in teaching and learning activities by Theo Hug (Hug, 2005a). This, later, became a popular approach in certain areas such as training (Hogle, 2021; Javorcik & Polasek, 2019; Margol, 2017; Shail, 2019), language (Brebera, 2017; D Edge et al., 2012; Darren Edge et al., 2011; Kovacs, 2015a), computer (Polasek & Javorcik, 2019; Skalka et al., 2021) and health (Filipe et al., 2020; Gawlik,

2021; Gross et al., 2019). Microlearning has received more attention over the last decade and has usually been investigated in relation to information and communication technology. As microlearning focused on the student characteristic, social media occurred as one of the media to deliver microlearning activity; telegram (Aldosemani, 2019; Redondo et al., 2021), Twitter (Aitchanov et al., 2013; King, 2018; Wakam et al., 2021), and Facebook (Islambouli et al., 2021; Kovacs, 2015a). Besides, mobile learning is bound to be a popular microlearning tool (Beaudin & Intille, 2006; Hug, 2015; Sunardi, 2020; Tong-ming, 2012).

Studies on the employment of microlearning can broadly be categorized into teaching and learning in educational institutions and non-educational institutions. The Majority of educational institutions that utilized microlearning occurred in the higher education. Aigerim(2014) design microlearning as tool to prepare student before taking CCNA

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examination. Buhu & Buhu(2019) constructed microlearning in higher education for textile education. Leela(2019) created living books (mobile learning and augmented reality) as part of a microlearning technique to foster computational thinking in vocational students. Stratton et al.(2020) produced three microlearning-based melanoma films with CSE material for digital transmission to PCNPs in various forms to teach nursing students. In the other hand, microlearning also utilized by non-educational institution as self-learning application to learning certain material. Edge et al. (2011) developed mobile microlearning application to help participant learn mandarin. Simons et al(2015) constructed a hybrid health support intervention system for changing health behaviours that combines electronic and physical support services, including a mobile micro-learning health quiz. Göschlberger & Bruck(2017) designed microlearning mobile application as a training supplement for new worker. Orwoll et al. (2018) utilized microlearning app as nurse companion to deliver standard practices on Central line-associated bloodstream infection treatment.

Within the last two decades, microlearning has been becoming an instrumental element of language education. The studies of microlearning occurred in various foreign language education (Aldanazaruly & Kazimovich, 2013; Aldosemani, 2019; Brebera, 2017; Darren Edge et al., 2011; Hug, 2006; Kovacs, 2015a; Unterrainer, 2012). On the use of microlearning in language education commonly address the learning process (Brebera, 2018; Darren Edge et al., 2011; Hosseini et al., 2020; Mohammed et al., 2018; Tolstikh, 2021) and the learning material development (D Edge, 2012; Kovacs, 2015b).

This issue of our study differs from that of issues in the previous areas of studies on microlearning. The previous study relatively discussed the development of instructional design based on certain particular objectives. Despite the empirical studies of exploring microlearning in learning material development has been conducted, no one to the best of our knowledge has studied the guiding descriptor to design microlearning lessons for English Language Learning. The study is purposed to, first, transform the principles of microlearning into the guiding descriptors of Microlearning-based Instructional Material for English Language Learning. Second, the study explores the relevance of microlearning-based learning object materials for post-pandemic English language teaching. This highlights the potential of microlearning as an alternative approach in English

language teaching and learning in a digital era of post-pandemic education.

Microlearning and Learning Material Development

Microlearning is a learning process through bite-sized and well-planned modules in the form of short-duration learning activities (Allela, 2021). This process includes microlearning as a learning methodology, as a method and related technology and as a process of creating subject matter. Microlearning reflects a growing reality today, namely fragmentation which includes fragmentation of information sources and units of information used for learning (Langreiter & Bolka, 2005a). Microlearning is also relevant to the limitations of brain work due to cognitive overload due to the long learning format (Mayer & Moreno, 2003), even though the attention span of adults is twenty minutes (Allela, 2021). Therefore, the basic idea of microlearning is to make learning materials in a concise form (granules or nuggets), but can accommodate an achievement or sub-achievement of learning in a format that is easily learned at one time, available when needed, contains only the necessary information and action-oriented, as well as practical.

The term microlearning is not as popular as a similar term, microteaching (Hug, 2005b). Microteaching is defined as a short teaching process by taking one or two skills to be taught (Paduri et al., 2017; Remesh, 2013). Microlearning, on the other hand, focuses on the micro-learning process through well-planned small modules in short-duration learning activities (Gstrein & Hug, 2006). This principle was in line with learning that emphasizes essential aspects, short duration and can be accessed anywhere and anytime. The learning process supported by microlearning-based teaching materials was an ideal choice to deal with educational changes after the pandemic period and the characteristics of students who are dubbed digital natives or digital natives.

The scenario of the learning process in microlearning is a framework that allows students or users to get the information they need (Allela, 2021)The microlearning learning scenario is a sequence of processes to acquire knowledge. The learning sequence contains a variety of models that have a specific purpose (Swertz, 2005). This sequence includes levels or levels to gain knowledge that begins with behavioural, emerging, causes, change and reflection (Peschl, 2006) . Microlearning has a unique arrangement of learning paths or phases

and can be adapted to the desired learning needs. Park & Kim (2018) suggested three steps of microlearning; intro, learning and organizing. In the intro phase, the focus was on content introduction. In addition, a diagnostic quiz to generate students' prior knowledge becomes an activity at this stage. In the learning phase, Park and Kim believed that the learning situation takes place interactively. Therefore, the recommended activities are gamification, interactive videos, quizzes or application demonstrations. And at the last stage, the focus lies on summarizing learning activities.

On the other hand, in designing the microlearning phase, Zhang & West (2020) focused on essential proof principles. the designed microlearning was broke down into three different points; introduction, lessons, and feedback. The introduction emphasized on attracting students' attention and bringing out students' learning schemes. In lessons, to teach practical skills, microlearning lessons provided timely learning with sufficient information for participants to learn the skills they need. In addition, quizzes were delivered in the lesson phase. And in the feedback, it looks like the conclusion of the whole activity. Lesson design provided clear feedback on student activity and progress.

Another learning phase design was proposed by Lee et al (2021). The design, adapted from Jahnke et al. (2020), unpacked the phase of microlearning activity into four main activities; Capture student attention, Present content, Generate performance, and Provide feedback and Assess performance. In the first phase, before starting the micro course, students read a short text that gives an overview of the course. This phase, intendedly, helped students understand the meaning of the topic. Then, the next phase focuses on how students interact with microlearning lessons. Students read or interact with interactive information after recognizing the significance of the topic. The lesson didn't just feature learning materials; instead, learners interact with them in a variety of ways. This was different from ordinary one-way textbooks or e-books, where students can only read information. Furthermore, after the interactive lesson and short exercises, many of which were gamified tasks, were presented after students have engaged and possibly mastered the subject. And in the last phase, Students are given feedback at the end of the microlesson. The drills applied give them quick automatic feedback on their performance.

2 METHODOLOGY

This study was qualitatively approached by employing library research. There were two objectives of this study; transform the principles of microlearning into the guiding descriptors of English learning object materials designing, explore the relevance of microlearning-based learning object materials for post-pandemic English language teaching. The library research was utilized to answer first and second objectives. In library research, actual information related to research questions is explored through source identification (George, 2008). There are three main things in library research; finding, sources, and tools. Finding is defined as an effort to find facts about the information needed and identify reliable and up-to-date sources. Sources are translated as evidence of results or synthesized answers from observations, opinions and all actions of research results. While the last thing is that the tools in question are all sources of knowledge. It includes dictionaries, encyclopaedias, book catalogues and other materials both printed and electronic (George, 2008). In this study, factual and actual information about the conceptual framework was obtained from books and scientific articles.

The first objective was transforming the principles of microlearning into the guiding descriptors of English learning object materials design. The principle of microlearning was analysed based on three underpinning principles; the principle of microlearning, the principle of teaching and the principle of material development. **The principle of microlearning** consisted of self-paced learning, bit sized, focused on one learning objective, and incorporating various media. **The principle of language teaching** comprised Transfer, Reward, Self-Regulation, Identity And Investment, interaction, and Languaculture (Brown & Lee, 2015). Last, **The principle of material development** derived from Tomlinson (2012). The underpinning principle was connected with the stage of learning of microlearning by the simplification of Peschl(2006), Allela (2021), and Jahnke et al.(2020). The stages consisted of schemata activation, content, exercise and assessment. The second objective was exploration the relevance of microlearning-based instructional materials for post-pandemic English language teaching. The process divided into three exploration of language teaching in before pandemic, during pandemic and post-pandemic.

3 RESULTS

The systematic review of the literature found that the concepts of microlearning, learning material, and language learning were all followed in the creation of microlearning-based learning materials for language learning. The systematic review of the literature's findings identified the guiding description for creating microlearning-based learning materials. Additionally, the outcome demonstrated the applicability of the microlearning approach to post-pandemic education characteristics.

3.1 The Guiding Descriptor of Microlearning

The Principle of Microlearning

The identification of principle of microlearning came from the definition by Hug (2005a) which compromise four main principles; self-paced learning, bit-sized, focused one learning objective, and incorporating various media. Based on the definition of microlearning, there were three main characteristics; small modules, separated learning process scenarios and a short duration of learning time. The first one is bit-sized or small modules. Small modules can be associated with the term microcontent or small content that is structured and cannot be broken down into smaller parts, and also has a specific focus (Leene, 2006). In more detail, these definitions turn out to be the main characteristics of microcontent which are structured, focused, unbreakable, traceable, and self-sustaining. This characteristic of microcontent in microlearning can reduce the effort in compiling long material by arranging material in pieces of different information but having a single coherent information unit (Langreiter & Bolka, 2005b). Beaudin et al.(2007) argued the design of technology let student to break larger lesson into smaller part. Buchem & Hamelmann(2010)saw microlearning as small learning steps with small chunks of information can be used for learning in- between and on-demand. Kerres(2007) determined microlearning lesson as spilt up into small unit lesson as stand-alone lesson unit. Based on this principle. The guide descriptors are:

- The lesson is chipped into small part
- The lesson is in small chunk information
- Lesson is split up into small unit lesson

The next guiding descriptor based on the principle short time. The duration of time in processing

information in microlearning is relatively short with the support of the two characteristics mentioned above; small modules and separate scenarios (Hug, 2005b). The process of preparing scenarios consisting of small modules or microcontent can shorten the process of acquiring knowledge (Pusawiro, 2006). The abbreviation in the microlearning learning process was carried out based on the process that is passed in the formation of microcontent by selecting the focus of the learning outcomes. In addition, learning with a short duration can be associated with time constraints in obtaining information (Allela, 2021; Mayer & Moreno, 2003).Bruck et al(2005)argued the learning module is breaking down into small part name *microcontent*. This situation only needs short time to fulfil the activity. Besides, Allela (2021)portrayed microlearning as a short time in order to cope with learner short attention span. Cole & Torgerson(2017) Typically, micro-activities are between two to ten minutes each. Based on this principle. The guide descriptors are:

- The lesson is in the small parts separated by the phase of learning
- The lesson is delivered in short time activity
- Each lesson is not more than 10 minute to finish it

Next is self-paced learning. Self-paced learning was described as learning that is controlled by the individual in order to accomplish personal learning objectives, with the learner having control over the amount of material consumed as well as the length of time required to fully acquire the new knowledge (Inkson & Smith, 2001; Xu et al., 2019). The main focus self-paced learning was the flexibility student learning. Flexibility was seen as a significant notion in individualizing the learning and teaching process, spanning all actions of learners from admittance to courses through the completion of the learning process (Bergamin et al., 2012). The flexibility broke the limitation of place and time (Demir-Yildiz & Tatik, 2019; Howard & Scott, 2017).(Carter & Youssef-Morgan, 2022). The process of microlearning activity let the student to determine the pace of learning. The student can freely choose the lesson structure,(Darren Edge et al., 2011) Student are allowed to do repetition on visiting the provided module. The student has own control on the access of the module to visit anytime.(Beaudin et al., 2007) the application was designed to meet the feel of the user whenever they are motivated to do lesson. although the learner can determinethe lesson they want to choose, the designer of the microlearning create lesson in sequence level of learner (Bernhard Göschlberger & Bruck, 2017). The creator

determined the phase of the lesson based on each objective.

The design of microlearning let the student access in the gap or spare time (Gabrielli et al., 2017). Small learning steps with small chunks of information can be used for learning in- between and on-demand. (Buchem & Hamelmann, 2010). Based on this principle. The guide descriptors are:

- Student are able to choose the phase of its learning.
- Student are able to repeat the lesson module
- Students are able to visit the lesson module anytime
- Students are freely and no time bound to do the lesson
- Students are able to choose the lesson
- The lesson phase is determined by the creator of microlearning based on the objectives of the lesson.
- Students are free to take the lesson in their chosen time
- Students are able to use the lesson in every situation of learning while learning or after learning

Incorporating various media happened as another last characteristics of microlearning. As the vast variety of technology in teaching and learning activity, the incorporation of those variety led microlearning elevated into new level.

Microlearning can instantly engage learners and keep them interested throughout the short course by using a range of material kinds (Allela, 2021). (Beaudin, 2007) mobile application. (D Edge, 2012) adaptive flashcard in mobile application. (Bernhard Göschlberger & Bruck, 2017) Gamification in elearning activity. (Simons et al., 2015) health quiz on mobile application. (Allela, 2021) microlearning can be on different form such as gamification, quiz, infographic, video, podcast, flashcard. The guide descriptors are:

- The lesson can be delivered in mobile application
- The lesson can be in the form of flashcard inside mobile application
- The lesson can be delivered in the form of gamification activity
- The lesson can be delivered in the form of quiz

The Principle of Material Development

Anything created by individuals (authors, instructors, or students) to convey information, use language to create experiences, and encourage language acquisition is referred to as material development

(Tomlinson, 2012). As a result, while creating instructional materials, it is important to first determine the needs of the students and take learning objectives into account. Then, by improving or tailoring it to better meet the requirements of learners, they may develop the content. Teaching materials can be modified and completed by decreasing, adding, removing, and altering them (Tomlinson, 2012). The study related with this principle are: the first is that the design of learning material may use big vocabulary flashcard that attracts student attention. The flashcard has bright design. To enrich the variety, microlearning can be on different form such as gamification, quiz, infographic, video, podcast, flashcard (Allela, 2021). Darren Edge et al. (2011) design micromandarin app that consisted 2 modes, dark and light. In the default, the app employs light mode. It dominantly has white colour. To gained attention, B Orwol (2018) created the content of microlearning that has the purpose to let the participant self-assessment through gamification app. This lead nurse attracted to app. It is also delivered by (Cates, 2017) which craft the content of microlearning that apply content and location awareness to engage user attention.

Furthermore, Bernhard Göschlberger & Bruck (2017) suggested that the application used some criteria in assessment quiz to give the level of achievement. This would lead user to challenge himself. Besides, Microlearning tasks should provoke the search for relevant information and discussion. Darren Edge et al (2011) portrayed it in the design of Micro Mandarin app that consisted 2 modes, dark and light. In the default, the app employs light mode. It dominantly has white colour. The content is so big and not have too many written texts on it. In related with principle of learning material that are more at ease with texts and illustrations,

Allela (2021) suggested that microlearning can be on different forms such as gamification, quiz, infographic, video, podcast, flashcard. In the term of learning material should more relaxed with materials which are obviously trying to help them. the microlearning program delivered on the basis to improve user retention on the new vocabulary related with house (Beaudin, 2007). The app automatically aware with the condition. Moreover, to help learner confidence, Microlearning may let the repetition activity lead student to gain accuracy of getting better in vocabulary learning (D Edge et al., 2012).

Furthermore, Beaudin et al. (2007) argued the application was designed to meet the feel of the user whenever they are motivated to do lesson. The student can freely choose the lesson structure. (Carter

& Youssef-Morgan, 2022). Next, Micromodules provide learners with real-life simulations, making it just as effective as using it in the outside world (Kerres, 2007). In the term of effect, microlearning should be able to be re accessed to make knowledge retention last longer (Hug, 2006).

In order to cope with student different learning style, microlearning, microlearning can be on different form such as gamification, quiz, infographic, video, podcast, flashcard (Allela, 2021).

Based on the discussion and finding above, the guiding descriptor related with material development are:

- The lesson on microlearning is delivered in attractive design
- The fragmentation of the lesson in microlearning are suggested to be delivered in various form
- The microlearning lesson consisted of materials that has white colour
- the microlearning content should engage student attention by delivering attractive activity.
- The activity of microlearning assessment should provide scoring system or level of achievement
- The microlearning content should not have too many contents on it
- The unit lesson may consist not only text but also illustration and in the various form of content.
- The unit lesson needsto use up-to-date vocabulary or material based on the context needed
- The unit lesson should let student to repeat the content
- The content of unite lesson should follow the context based on the syllabus or curriculum
- The student can select the lesson freely
- The unit lesson provided context of the language
- The unit lesson of microlearning can be accessed anytime
- The unit lesson is in various object

3.2 Microlearning for Post-Pandemic Education

Microlearning are in line with the process of future educational development which is influenced by aspects of technological development, the direction of education after the covid-19 pandemic, the characteristics of learners or digital learners and changes in the roles and responsibilities of teachers. During the pandemic COVID-19, the significant development of education encourages microlearning-based learning object as major concern for future

learning. According to the report by the Organization for Economic Co-operation and Development (OECD, 2021), significant changes have occurred in school closures and distance education. Distance education is the main alternative to ensure the implementation of the learning and teaching process. In addition, flexibility in the use of existing resources is supported by central level policies for the distribution of education during a pandemic. In this process the existence of technology becomes essential in education. The internet has become a supporting factor for the implementation of distance education during the pandemic. The existence of internet infrastructure in the implementation of distance learning or online learning was the foundation for the successful implementation of online learning. Education providers must be ready to face changes by adapting education patterns in the future (Oyedotun, 2020).

Post-pandemic education is pinpointed on shifting in type of learning, the use of technology, and adapting to the characteristics of digital learners. The sudden shift from face-to-face learning to online learning during a pandemic, paved the way for hybrid learning in the post-pandemic period. Srinivasan et al. (2021) showed that the majority of research respondents stated that online learning was not a preference in their learning. In addition, the results showed that the respondents felt that they had decreased ability in teaching and learning activities. However, on the other hand, the experience in implementing online learning rendered the teacher want to link face-to-face and online learning with certain criteria. This was evident from the majority of respondents also want hybrid learning. It is necessary to prepare a learning system in dealing with the post-pandemic period. The period after the pandemic will be influenced by the emergence of the latest COVID mutations, which forces educational institutions to be ready to prepare a learning system that adapts to the existing situation (UNESCO, 2020). As the result, the use of technology is the epicentrum of post-pandemic education.

With technology, education is moving to adapt to the digital era. The focus on educational changes in the digital era are on knowledge structure, knowledge distribution, acquisition of microcontent and micro knowledge (Hug, 2007). This also should look into the characteristic of digital learner. The evolution of technology affects changes in the way of learning, especially in digital learner (Noguera Fructuoso, 2014). Young people are starting to not be interested in spending time listening to lectures, because they prefer to directly use or apply the knowledge and

skills acquired (A Buhu & Buhu, 2019). In many cases they need the option to study anytime and anywhere, not just in school (Nicholas, 2008). Hence, the characteristics of Microlearning approach happened as meeting point of the demand in post pandemic education. Microlearning attached to short-time activities, small content and focused learning goals (Allela et al., 2018; Makhlof, 2015; Tennyson et al., 2021). Besides, self-explanatory learning content turned out to be one of strong feature of microlearning (B Göschlberger, 2016).

4 CONCLUSIONS

The present study was designed to transform the principles of microlearning into the guiding descriptors of Microlearning-based Instructional Material for English Language Learning. Second, the study explores the relevance of microlearning-based learning object materials for post-pandemic English language teaching. There are two main principles as the basis to create the guiding descriptor to design microcontent; the principle of microlearning itself and the principal material development. As the result of reviewing literature of those principle, there are five main focus the principle of short-term, bit sized, self-paced learning, focused on one objective, and use various media. While in the term of material development, the principle derived from the list of good learning material proposed by Tomlinson. Moreover, the study explored the relevance of microlearning-based learning object materials for post-pandemic English language teaching. The main factor that concludes microlearning is the Hybrid Learning, Digital Learner, UNESCO Post Pandemic Movement, The Use of Technology, and Learning Loss. Although the study has successfully demonstrated the guiding descriptor. it has certain limitations in terms of lack of additional principle such as the principle of language learning and the principle of learning media. Another possible area of future research would be to design microlearning learning material based on the result of this study.

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