INTERNATIONAL JOURNAL OF CREATIVE MULTIMEDIA

International Journal of Creative Multimedia

Editorial Board

Aim and Scope

The International Journal of Creative Multimedia (IJCM) is a peer-reviewed open-access journal devoted to publish research papers in all fields of creative multimedia, including Digital Learning, Film & Animation, Media, Arts & Technology and Visual Design & Communication. It aims to provide an international forum for the exchange of ideas and findings from researchers across different cultures, and encourages research on the impact of social, cultural and technological factors on creative multimedia theory and practice. It also seeks to promote the transfer of knowledge between professionals in academia and industry by emphasising research where results are of interest or applicable to creative multimedia practices. We welcome all kinds of papers that connect academic researches with practical and industrial context in the field of creative multimedia. The scope of the IJCM is in the broad areas of Creative Multimedia following the five major thematic streams, includes but not limited to:

- Digital Learning
- Media, Arts & Technology
- Games and Virtual Reality
- Cinema and Film Studies
- Animation and Visual Effects
- Visual Design and Communication

Foreword from Digital Learning Editorial Team

Greetings from the Editors and welcome to the Special Issue on Digital Learning in the 21st century. In this Issue, we present papers from international and local researchers focusing on research papers in areas of education technology, learning analytics, e-learning, engineering, IT, business and management, creative multimedia and many other domains that seek to improve the learning process of the learner with technologies. These papers were presented in the ELITE 2019 International Conference held in Multimedia University, Cyberjaya, Malaysia on October 2, 2019, in conjunction with the 2019 IDE4TE International Exhibition on Oct 1, 2019. Themed, "Empowering Learning, Innovating Teaching Environments", this event showcased best practices of Malaysian Universities, particularly from the network of Industry Driven Education Alliance (GLU iDE4) comprising of Universiti Teknologi Petronas (UTP), Universiti Multimedia (MMU), Universiti Tenaga Nasional (UNITEN) and Universiti Kuala Lumpur (UniKL), as well as from international presenters from China, India, Bangladesh and Maldives.

The papers presented in this Special Issue centred around 5 sub-themes; 1) Innovative Pedagogies & Instructional Design, 2) New Roles of Teachers, 3) Redesigning Curriculum for Education 4.0, 4) Emerging Technologies In The Classroom, and 5) Designing Learning Spaces for 21st Century Education, and are very timely articles for readers interested in adapting technology in today's classrooms. We hope that these papers will provide further insight and contributions to the knowledge base in these fields and we hope you enjoy reading them.

Prof. Ts. Dr. Neo Mai, Multimedia University, Malaysia

Professor Dr. Neo Mai is the Director for Academic Development for Excellence in Programmes and Teaching (ADEPT) for Multimedia University, and Professor in the Faculty of Creative Multimedia, and the Institute for Digital Education and Learning (IDEAL). Prof. Mai is the Director of the award-winning MILE Research lab and founding Chairperson form the CAMELOT (Centre for Adaptive Multimedia, Education and Learning cOntent Technologies) Research Centre. Prof. Mai's research interests are in the design of constructivist learning environments, micro-learning, team-based learning and web-based education. She was the recipient of the 2014 Excellent Researcher Award, an AKEPT Certified Trainer for Interactive Lectures (Level 1, 2, 3), an HRDF certified trainer and is certified in Team-Based Learning from the Team-Based Learning Collaborative, USA.

Dr. Gan Chin Lay, Multimedia University, Malaysia

Dr. Gan Chin Lay is a Senior Lecturer affiliated with the Faculty of Business, Multimedia University. Her main research interest is in learning analytics, particularly related to technology-enhanced student-centered learning environments. Her research domains include teaching and learning issues such as student engagement, and educational technology integration frameworks.

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Dr. Liew Tze Wei is a Senior Lecturer at the Faculty of Business, Multimedia University, Malaysia. He is leading the Human-Centric Technology Interaction Special Interest Group, in addition to serving as the collaboration & innovation coordinator and research & innovation committee member in the faculty. His research interests and contributions fall within learning sciences, human-computer interaction, and media psychology; with a strong focus on experimental research approach.

International Journal of Creative Multimedia

Collaborative Learning Tools for Constructive Learning in Maldives

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Abstract

Collaborative student work has taken a stronghold in higher educational contexts due to the paradigm shift from instructor-centered to student-centered teaching and learning. Instructor roles have shifted towards facilitation and students have become more active in their learning, creating and sharing knowledge within their social groups. The availability of online tools enabling peer collaboration has been the main driving force behind this progress. These online collaborative learning environments have been particularly useful for geographically distributed learners with limited opportunities for face-to-face collaboration. With the evidence from literature, this has proven to be applicable to Maldives, with its unique geography of 1190 islands distributed over 20 atolls, with students across the country in executing constructive learning approaches in Maldives. However, evidence from studies are required to support on the effectiveness from student's perception, and the impacts of the tools in learning.

Keywords Constructive learning; Maldives; Collaborative learning tools; Wiki; Padlet

Introduction

Education in the 20th century, is witnessing a paradigm shift in learning especially in higher education institutions with a shift towards student-centred learning (Aguti, Walters, & Wills, 2014) as opposed to instructor-centred, stemming from the belief that knowledge is considered as a social construct which is facilitated by peer interaction, evaluation, and cooperation (Lee & Bonk, 2014). This shift is referred as collaborative learning where instructional methods encouraging learners to work together on academic tasks

are being used (Lee & Bonk, 2014). The theoretical framework of collaborative learning is reinforced by the theory of constructivism which considers students as active learners and take more responsibility for their own learning (Yueh, Huang, & Chang, 2015).

In collaborative learning, students work in groups, teaming with peers, equally searching for understanding solutions and meanings, or creating products (Yueh, Huang, & Chang, 2015). Collaborative learning also involves engaging individuals as a group member to facilitate learning, which results in the concept of sharing meanings and build group cognition supported by constructivism (Yueh, Huang, & Chang, 2015). Since instructions shift from an instructor-centred to a more learner-centred paradigm, a learner-centred personalised learning environments needs to be created in collaborative learning (Lee & Bonk, 2014).

With reference to Sigala (2007), Lee & Bonk (2014) states that learner-centred personalised learning environments have been accelerated by the advent and application of Web 2.0 technologies. This provided favourable tools for performing collaborative work where students can share, negotiate, and discuss among themselves asynchronously outside the class (Li, 2015). The collaborative learning tools include communicational tools allowing synchronous and asynchronous text, voice or video chat as well as online spaces facilitating brainstorming, document editing, and remote presentation of topics (Mallon & Bernsten, 2015). The availability of these tools further accelerates collaborative learning as a popular method of engaging students (Mallon & Bernsten, 2015).

Furthermore, collaborative learning tools available over the internet offered new ways of real collaboration which serve as a solution to the fact that physical collaboration between students is often limited by location and time constraints (Duarte et al., 2014). Due to its geography, collaboration among students in dispersed locations is a challenge faced by higher educational institutes of Maldives. Moreover, the dispersed nature raises further issues which increases the need for collaborative learning tools in implement constructive learning in Maldives. Even many industries use collaborative tools as a bridge for the interactions among multinational teams that are globally distributed (Esparragoza & Ocampo, 2015).

This paper proposes the use of collaborative learning technological tools as a solution to the barriers in practicing constructive learning through collaboration in higher education in Maldives. Two tools; Wiki and Padlet, which are proven to be effective collaborative tools are suggested among many.

Literature Review

Constructive Learning

Constructivism is an educational theory in which students conceptualise their own ideas with the help of hands-on activity-based teaching and learning (Keengwe, Onchwari & Agamba, 2014). These activities must occur within a social context where there are possibilities for engagement or interaction among all the participants of the learning community. Constructivists learning environments are designed to incite the kind of thoughtful engagement helping students to develop effective thinking skills as well as attitudes that result in effective problem solving and critical thinking. This provokes a student-centred approach where students are expected to be active learners and take responsibilities for their own learning experience (Keengwe, Onchwari & Agamba, 2014). By talking, listening, writing, reading, and reflecting on content, ideas, issues and concerns, students construct their own meaning and helps to foster creativity (Aguti, Walters & Wills, 2014). Similarly, students are considered to create connections between facts, ideas and processes through dialogue between teacher and students, and students with their peers making learning a dynamic process and highly social initiative which requires constant development of human relationships and communication (Aguti, Walters & Wills, 2014). Thus, "constructivist pedagogy conceptualizes learning as an active and manipulative activity that encourages constructive and reflective thinking that results in creating collaboration and a conversational atmosphere" (Keengwe, Onchwari & Agamba, 2014). So, instead of transmitting knowledge, the primary role of a teacher in constructive learning is to be a facilitator who is responsible in providing a learning environment for the learners that allows collaboration through mediating, modelling and coaching. (Keengwe, Onchwari & Agamba, 2014).

Collaborative Learning Tools

"Collaborative learning tools are a set of tools used for task-specific collaborations which are associated with goal and work-oriented activities." (Cheung & Vogel, 2013) These tools provide ample number of possibilities for content creation, editing, and sharing by bringing functionalities of desktop applications to a Web Browser. The availability of online collaboration tools allows communities of common interest to share content and commentary via online participation with wikis, discussion forums, and through different file formats that can be shared or edited online (Cheung & Vogel, 2013). Among these tools includes Wiki and Padlet.

"Wiki is a type of Web 2.0 technology which enables users to work together on the web" (Hadjerrouit, 2014). Wiki helps in providing a workspace to generate ideas and share it; to construct, edit, and preserve

shared knowledge in an open environment where it can readily be accessed (Kear, Donelan, & Williams, 2014). On a Wiki, any community member can freely edit, delete, and modify content as Wikis are collaborative websites involving the collective works of multiple authors who together gain knowledge through the collaborative efforts (Yueh, Huang & Chang, 2015). Wikis have three main functions in facilitating collaboration:

(a)   Editing function: many users can create and modify articles, texts or documents.

(b)   History function: all the editing is recorded which helps in monitoring.

(c)   Discussion page: enables users to post comments and explanation enabling asynchronous learning.

"Padlet provides a free, multimedia-friendly wall which can be used to encourage real-time, whole-class participation and assessment" (Fuchs, 2014). Padlet provides similar experience of collecting ideas from whole class by writing on sticky notes and pasting those on a wall, online. It works on different devices and need not require participants to create accounts (Fuchs, 2014). In Padlet, everything happens in real time which allows everyone viewing the wall to see what is going on immediately (Atwood, 2014).

Geography of Maldives

Maldives is a low-lying island country in the Indian Ocean (Geography of Maldives, n.d.) where the islands are just 7.8 ft. above sea level (Maldives, n.d.). It is 717 km from Sri Lanka and 430 km from India and covers an area of 90000 square kilometres southwest of Sri Lanka with 1192 islands dispersed all over.

There is a lagoon or sea in between the islands making every island individual and separate from other islands. Maldives is considered and archipelago of islands – meaning chain of atolls based on geographical grouping of islands (Geography of Maldives, n.d.).

The Need for Collaborative Learning Tools in Maldives

Since 1999, Maldives has been practicing distance learning which was initiated with the aim of providing opportunities of nationwide higher education where isolation of islands was a barrier (COL - a trademark for distance education, 2016). Centre for Open Learning (COL) – a centre established for the purpose, runs under the Maldives National University (MNU), currently reaching fifteen out-reach centres all across the country, in addition to the four main campuses of MNU, and offering many courses in blended mode.

Students needs to attend any out-reach centre nearest to their island twice or thrice in a fourteen weeks long semester for their block classes. In addition, there is online-teaching carried out in between the blocks (Teaching and Learning in Blended Mode, 2016). Since COL has more than eighteen years of experience in the field, interview was conducted among all the academic staff of COL.

According to the thirteen academic staff of COL, their assessments and most of the online activities are based on individual reflection of students. Also, during block classes, students are allowed to do worksheets and tutorial exercises. Asynchronous discussion forums as well as synchronous chat sessions are set to facilitate learner-learner and learner-teacher interaction, but these discussions are very much objective based where students need to answer or present their views on specific question or scenario related to a topic. It does not provide an environment where students can build their own knowledge or apply critical thinking: a key principle of a constructive learning environment. Their main concern in practicing collaborative learning is time and location which is considered as limitation to collaboration (Duarte et al., 2014) with location being the major issue.

Academic staff of COL states that classes consists of students from different islands which is one of the reasons for not giving group projects. Students find it difficult to meet up in a physical location as islands are separated by ocean and transportation cost is high even within atolls, which is a concern raised by students even attending their block classes. Furthermore, if the weather is bad, the Meteorological Service of Maldives will give Yellow Alert stating that sea transportation is not advisable as seas will be extremely rough with wind speed expected or prevail between 20-40 miles per hour (Maldives Meteorological Service, 2015). This affects the face-to-face block classes as well. The block needs to be re-scheduled or even sometimes cancelled and even if block is arranged, students are unable to attend. According to COL, there was re-scheduling of blocks twice in the last semester. So even group activities are difficult to be arranged in block classes as some students were unable to participate. Moreover, they highlight that in block classes there are six to ten hours allocated per module and each block needs to cover 4 modules which results in a limitation of time in order to conduct collaborative activities effectively during the block classes.

"The advance of internet technology provides favourable tools for performing collaborative work" (Li, 2015). These tools allow students and instructors to interact in a non-traditional setting which is not limited by physical location, helping to design a true learning community where instructors have the opportunity to foster interaction and collaboration in both asynchronous and synchronous learning

(Gullström, 2017). Academic staff of COL also believes that it is important to move towards constructive learning allowing students to be active and learn by themselves rather than depending on instructors. In higher education and online teaching it is a key need but they claim that in Maldives, the culture of constructive learning needs to be built. The main reason of it not being practiced is the geographically dispersion of islands, and as a solution is to adopt the available collaborative learning tools. And also, they highlighted that these tools needs to be implemented in higher education which will lead to the development of constructive learning in Maldives especially when there is a demand for block mode where students frequently do not meet with one another as well as with the instructor. They further highlighted that even other faculties of MNU as well as other private institutions in Maldives offer courses in block mode (without online teaching), which further increases the necessity of collaborative learning tools to adopt constructive learning.

Hence, it is important to know the available effective tools. Being the first and earlier technology (Duarte et al., 2014), Wiki can be considered as one of the tools together with Padlet which is more recent with more attractive user interface (Heng & Marimuthu, 2012). Both have been proven to be effective collaborative learning tools.

Methodology

This paper is aimed to find a solution to the problems faced in practicing constructive learning through collaboration among higher education students in Maldives. Hence, this study involves a literature review on using technological tools as a means to full-fill the above stated purpose and proposes two tools that can be used based on the findings and analysis from the existing related literature.

Articles for the review was selected from Google Scholar; searched based on the keywords "Web 2.0 collaboration tools" and "Web tools for constructive learning". The search results were further filtered to select the papers published from 2012 to 2017. Papers detailing the applications of different technological tools for teaching and learning promoting collaboration and constructive learning and students' acceptance level of those tools were set as the selection criteria. A total of twenty papers that passed these criteria were included in the review and the frequency of the tools mentioned among the papers was considered in order to propose the two tools.

Results and Discussions

After reviewing the 20 selected papers, several tools were identified as illustrated in Table 1 below.

Table 1 Result of the review stating the tool and frequency

Tool	Number of papers mentioned
Wiki	19
Blog	16
Padlet	17
Google Docs	10
Trello	4
Podcast	8

Since Wiki and Padlet was among the highly mentioned tools in the papers reviewed and proven to be effective for collaboration which promotes constructive learning, these two tools were selected and further studied on their features and applications.

Wiki as a Collaborative Learning Tool

According to Prokofieva (2013) as mentioned by Zorko (2009), the development of wikis (example as shown in Figure 1) provided an easily editable virtual space for creation of collaborative knowledge. It allows to transform one's own knowledge into a shared digital artefact as stated by Lee & Tasi (2009). Prokofieva (2013) further states with reference to Choy & Ng (2007) that the flexibility in creation of knowledge in wiki allows users to present "data in a freer manner than existing asynchronous learning tools such as discussion forums." Furthermore, practical applications of wikis in a wide range of disciplines have been discussed by the educators. Prokofieva (2013) gives examples of such disciplines as computer science courses with reference to Bower et al. (2006), language learning with reference to Richardson (2006), and health science courses with reference to Snodgrass (2011).

Interaction is always considered as a crucial element in teaching and learning (Prokofieva, 2013) as stated by Anderson (2008). In fact, interaction is considered as a vital factor in technology-mediated education (Prokofieva, 2013). A study conducted by Prokofieva (2013) to evaluate the types of interactions of students engaged in a wiki-based collaborative project, showed that in such projects, students engage in all the three types of interactions namely; "student-content, student-instructor, and student-student" (Moore, 1989) which may not be meaningfully correlated in a traditional classroom setting (Ting, 2013).
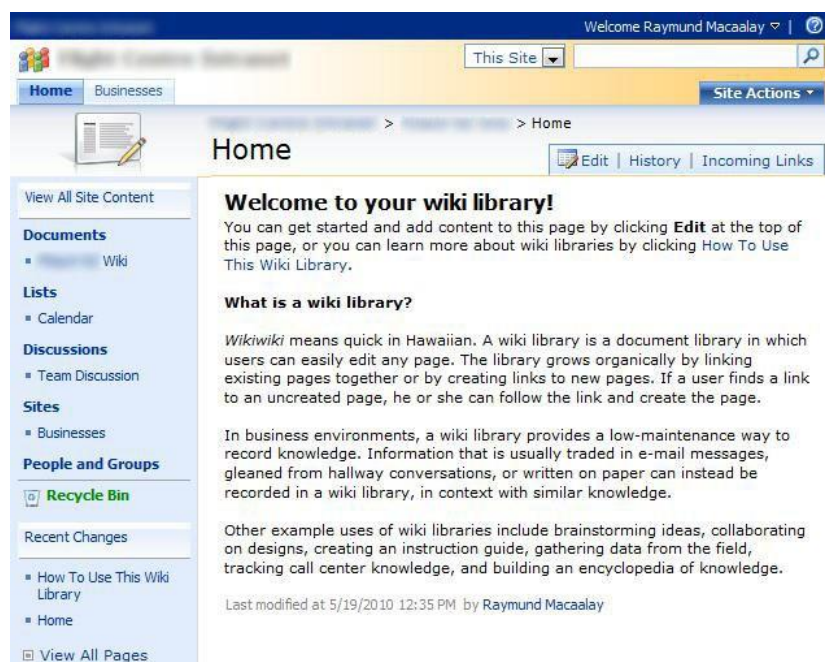
Figure 1 Macaalay (2010). Wiki Example. Retrieved from Raymund Macaalay's Dev Blog

Padlet as a Collaborative Learning Tool

Padlet (example as shown in Figure 2) "is an interactive web-based bulletin board with many uses" (Wong & Maceira, 2017). It is ideal for collaboration and poses open-ended questions for reflection and assessments (Wong & Maceira, 2017). Study conducted by Wong & Maceira (2017) by integrating Padlet as a tool to enhance active learning with increase engagement of students, presenting and creating reflections showed that there was increased engagement, creativity and reflection from the students.

Weller (2013) cited by Dewitt, Alias, & Siraj (2015) states that Padlet has been used for simple instructional tasks, as well as for more complicated tasks among the experts as it is a tool for interaction in a virtual wall. Furthermore, the findings of a survey conducted by Dewitt, Alias, & Siraj (2015) in finding out the usability of Padlet for constructing new knowledge and for collaborative learning indicated that students could learn and generate new ideas and can be used for collaborative learning.

DeWitt et al. (2015) states that deaf students face more difficulties in communication and learning problems without specific facilities to cater for their needs in higher education institutions. Hence, they suggest Padlet as a solution to bridge this gap and designed a learning module for the deaf in a higher education institution using Padlet. After the evaluation of the prototype module with data collected from

observations and interviews of four deaf students, the findings stated that Padlet is a helpful and effective tool that could be used for communication among deaf students (DeWitt et al., 2015).

The success in the classroom is mainly defined by the quality and quantity of student participation (Fuchs, 2014). However, barriers for instance students being afraid to make mistakes, feeling shy and afraid of how the instructor or classmates might respond to an opinion prevents student participation in class (Fuchs, 2014). Hence ways need to be found out to overcome these barriers to support an inclusive classroom environment. Fuchs (2014) uses Padlet in his class as a solution. He claims that Padlet helps in overcoming some of the challenges involved in class participation and encourages whole-class collaboration and engagement.
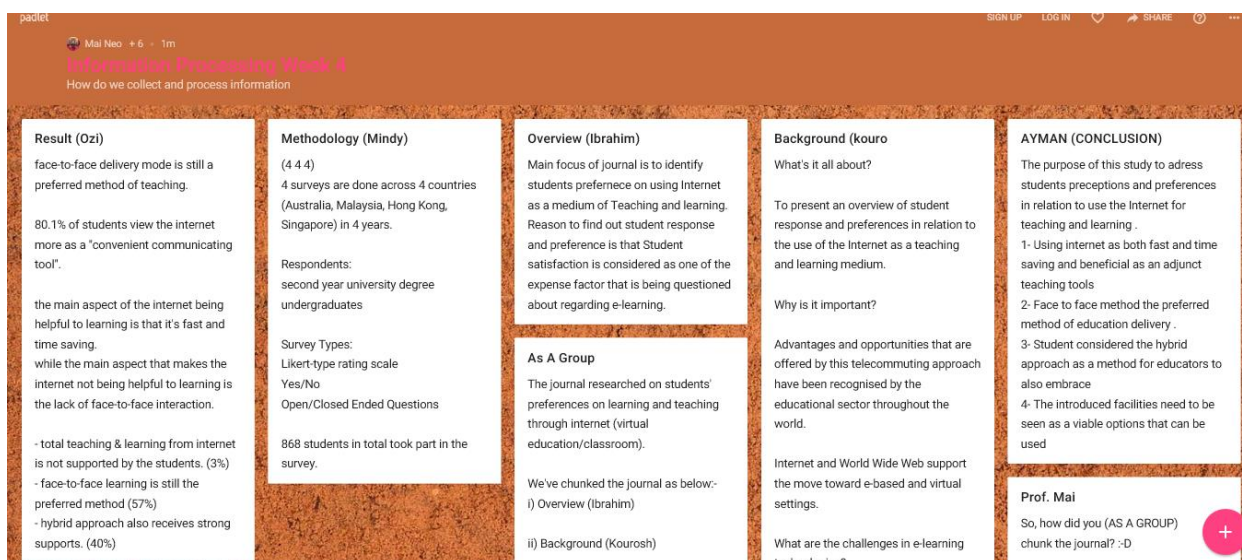

Figure 2 Mai (2017). Padlet Wall. Retrieved from Dr. Mai's Place

Besides proving Padlet as an effective collaborative tool, features like saving, copying, and pasting documents and multimedia files from the virtual wall into any other application and placing them dynamically using several techniques (Dewitt, Alias & Siraj, 2015) makes it more user-friendly. Also as stated by Weller (2013) cited by Dewitt, Alias, & Siraj (2015), it does not require special training to use the Padlet. Moreover, using Padlet, students will be able to read, create and comment on other student's responses about the classroom concepts and activities in the same way that they regularly interact with user-generated content in the form of Facebook, Twitter, and comments at the end of online articles (Wong & Maceira, 2017), further adding credit as an effective collaborative tool.

Conclusion

Traditional model of instructor-centred teaching and learning where knowledge is considered transmitted from teacher to learner is being rapidly replaced by student-centred model of learning. Students are guided and supported to construct their understanding as they learn. This is mostly being achieved via collaborative activities. To adhere to the change, Maldives also needs to adopt constructive learning model. The fact that Maldives consists of dispersed islands, together with further issues related to it, is considered as a limitation for the application of constructive learning. Due to the advancement of technology this barrier can be removed with the help of online collaborative learning tools. In fact, these tools have become a necessity in Maldives to initiate the culture of constructive learning.

Since there are a multitude of tools available, it is important to find a proven effective tool. Wiki and Padlet are among such tools which are proven to serve the characteristics of collaborative learning. However, further researches need to be carried out to find the effectiveness of the implementation of these tools. Similarly, student's response about these tools needs to be further studied.

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Authors' Bio

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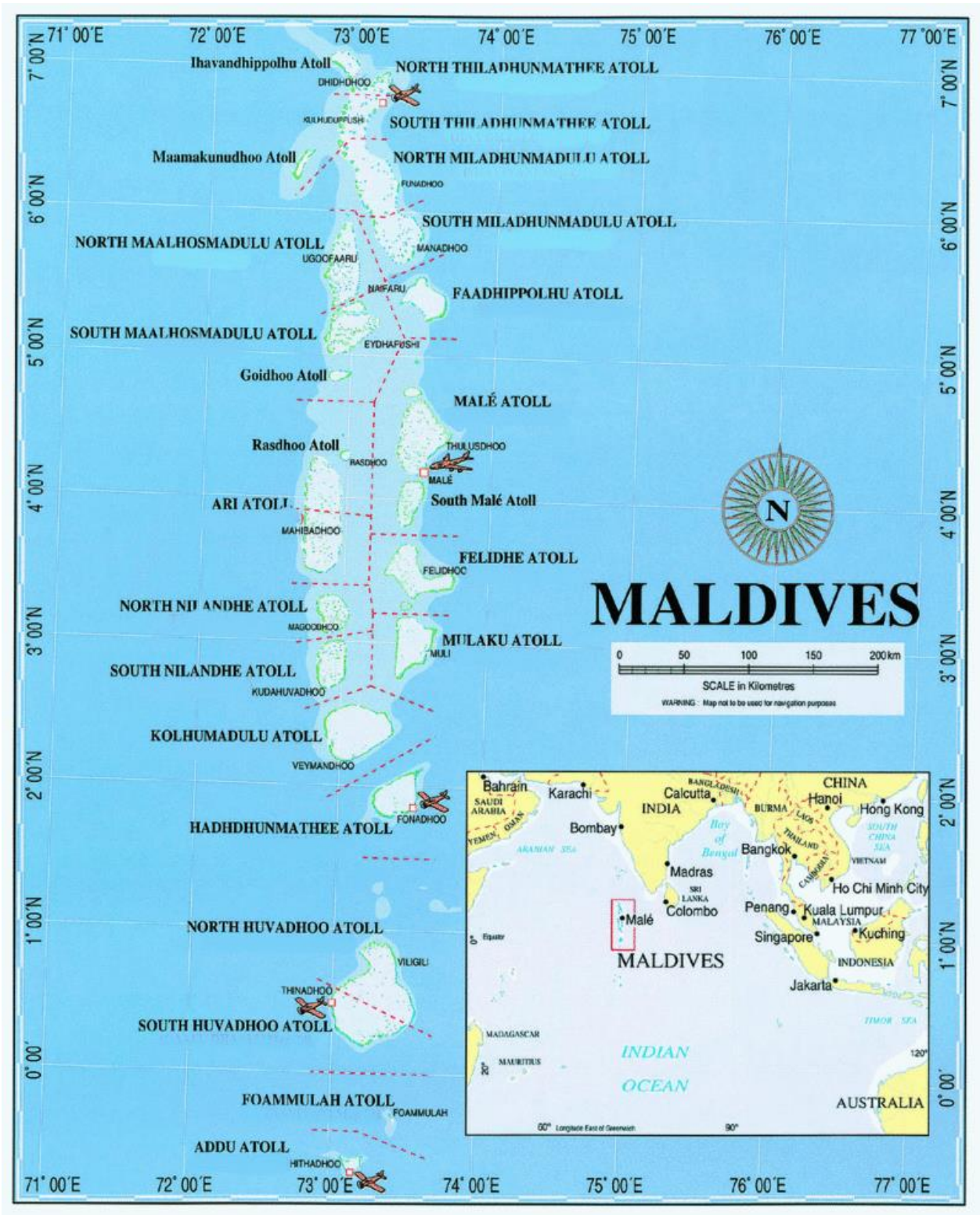
Appendices

Figure 3 Maldives Map. Retrieved from: maledivenbucher.ch

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