THE USE OF VISUAL AIDS (PRINTED OR DIGITAL FORMAT) IN LANGUAGE TEACHING ACTIVITIES TO PRIMARY SCHOOL STUDENTS IN ROMANIA

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Abstract

As shifting to a digitalized learning environment is exponentially playing an important role in education nowadays, moreover after the pandemic crises. The present paper focuses on the impact of the use of (electronic) visual aids in language teaching-learning in primary school. A research methodology was derived to investigate the effect of some visual aids (flashcards, printed and on a digital format) used in language learning on development of communication skills. The article highlights some important related work on how the technical development is changing the learning format and content providing both positive consequences (easily accessible content, no physical barrier to access information, a voice for those who cannot produce speech). The paper analyzes the implications of the electronic visual aids as effective teaching-learning tools in language-oriented activities/lessons in primary school settings. The main research questions addressed in this paper are as follows: to what extend visual aids (printed and digital-format flashcards) facilitate concept comprehension and vocabulary memorization; what are the important instructional design principles

in organizing language learning activities by integrating printed and digital-format flashcards to promote a better communication and what is students' most preferable type of visual aids: printed or digital-format flashcards. The target group was represented by 13 primary school teachers and their groups/classes of students (294 students). The results of the data analysis showed learners' positive attitudes toward learning activities that included flashcards (printed and digitals) (satisfaction or perceived usefulness), and it was also found some improvement in student outcomes on vocabulary building.

Keywords: visual aids, communication, teaching, language learning, pre-primary and primary school

Introduction

Technology-mediated learning is gaining lots of momentum (Curum & Khedo, 2021). The new learning paradigm promotes the creation of an authentic learning setting using different teaching/learning resources to stimulate, motivate as well as focus learners' attention. Learning is a complex process that is based on social exchanges between students and others (peers, parents, teachers, educators) (Vygotsky, 1962, 1978; Castro-Alonso et.al., 2021). In this paper, interactions through different media (e.g., smartphones, computers, and virtual reality) are examined and explore the exchange of information between learners and instructors. The omnipresent of online based learning cannot be ignored or avoid and provide learning the advantage to take place beyond traditional spaces, online and offline learning can happen anytime and anywhere (Curum & Khedo, 2021). Studies on impact of technology-mediated learning on communication and learning (Burgoon et al. 2000, Cheah et al., 2019; Syrjämäki et al. 2020) have shown a decrease in social interactions in a shared physical space which hinder the social information exchange (e.g., anthropomorphism, nonverbal communication, and voice) (Castro-Alonso et.al., 2021) and increase the feelings

of isolation in online learning environments (Lee & Rha, 2009; Erichsen, & Bolliger, 2011; Van Wart et.al., 2020). Other studies indicated that the continuous consumption of information or improper design of multimedia contents cause unnecessary cognitive load (Efklides, 2008; Li et.al., 2019; Ashman et.al., 2020; Paas & van Merriënboer, 2020), cognitive load will hinder learning performance (Costley et.al., 2021). Studies (Curum & Khedo, 2021; Shadiev, 2015) pointed out the need to adaptation of the content using the learners' context information to ensure an effective learning experience and avoid cognitive orverload. This urges an analysis of the cognitive load on learners based on the amount of information flow they are presented with. It is important to study further development in terms of use of visual and electronic tools and instructional design (Park, 2014; Feldon et al. 2019). Visual aids (e.g., illustrations, wall charts, exemplified pictures, symbolic materials, two-dimensional items, maps) and any device which by sight and sound increase learning process are instructional aids used in the classroom to encourage teaching (Shabiralyani, et.al., 2015). Teachers use visual aids to facilitate concepts understanding, the multisensorial methods enhance our performance in comparison with unimodal stimulus presentation (Stein & Stanford, 2008; Pink, 2011; Maloy et.al., 2017; Jensen & Konradsen, 2017; Roy et.al., 2021).

Theoretical background

Teaching and learning has to adapt to the nowadays digital environment. The learning tools will adapt and evolve in accordance with the context where teaching and learning takes place and it is unavoidable to integrate audio-visual devices to teaching process. We have to be aware that learning happens in the most dynamic and constantly changing environment so far (Curum & Khedo, 2021). Meeting the objective of preparing better students for the 21st-century labor market, teachers started to incorporate in their teaching practice technological equipment, even though there is not a complete understanding of

the effect of digital device use on curriculum, instruction, and learning (Garofalo & Farenga, 2021). The misapplication of technology is having an adverse effect on students' technological literacy (Avsec & Jamšek, 2018) and moreover on students' performance (Hawi & Samaha, 2016). The integration of online learning could be an alternative and convenient learning model to respond to some barriers (time, place, costs) (Hsu et.al, 2021) and the ensure learning and as well as in case of professional development online environment could increase the quality of their teaching (Christensen & Knezek 2017). Online learning, virtual space can contribute to a wider network for working and learning collaboratively for innovations in pedagogies and for professional development. The shift from face-to-face interaction to mediated communication changed as well the way instruction can be delivered (by using multimedia pedagogical agents) (Castro-Alonso et.al., 2021).

Audio-visuals are extensively used to sparkle student's attention and allow learners to additionally interact with learning contents in real time, although studies shows that those tools have to be used wisely and for short periods of time (Ozan & Ozarslan, 2016; Hughes et.al., 2019; Costley et.al., 2021) to avoid overload and be able to build up learning readiness and linear instrument for a deep learning. Modern audio-visual tools will include multimedia pedagogical tools that can range in simple static characters that provide information to complex and dynamic animated three-dimensional agents that narrate information while gesturing (Castro-Alonso et.al., 2021). The audio-visual aids developed mostly to ensure access to learning, to information for people with disabilities (Kulkarni, 2018). The technical development is changing the learning format and content providing both positive consequences (easily accessible content, no physical barrier to access information, a voice for those who cannot produce speech). Technology has created both opportunities and challenges for teachers and students (Xu, M. & Stefaniak, J., 2021). Visual aids or any item of illustration with learning content in the form of films, slides, modeling, poster,

graphic organizers, are designed to supplement written or spoken information to make it more accessible for comprehension. They have a supportive role in highlighting relevant information and boost its retention. The use of objects, photographs, slides, graphs, bulletin board displays, vivid posters, drawings, videos make lectures or presentations more compelling to the brain and provides ways to grab attention (Jensen, 2008). Visual aids facilitate focuses attention on the content to be learned and it facilitate the memorization process for students to remember the concepts they've just learned, providing associative learning by linking the concept to the visual representation (Stancampiano, 2013), providing a way of accessing learning materials through a device irrespective of traditional learning settings (Curum & Khedo, 2021), to enhance scientific spatial understanding (Linn et.al., 2003). Similarly, a recent review also reported that computer simulations which can visualize invisible phenomena and provide opportunities of manipulating experimental variables have positive learning effects (Rutten et al., 2012). With capability of infusing digital information throughout the real world, technology could engage learners in an immersive context along with creating authentic experiences to make scientific investigations, collect data outside classroom (Dunleavy et al., 2009; Cheng, K., & Tsai, C., 2013).

Studies (D. R. Beukelman, 1991; L.Z. Burkhart, 1993; Bel, 2011) shows that it`s useful and advisable to integrate them into educational activities, lessons to create more inclusive learning environment. Interactive book reading is an active practice that aims to stimulate children's language and literacy development (Barnes et.al., 2021). Some electronic devices facilitate access to educational resources and create spaces for exchange and collaboration (Chan et. al., 2015), studies warn on drawbacks of technology related distractions on homework effort and environment (Xu, 2015). Researches has to be done to investigate how technology can assists students' learning to explore the impact of technology-aided learning on students' performance, as clear empirical

evidence on how these interact is still lacking (Avsec and Jamšek 2018). Studies (Linn et.al., 2003; Trust et.al., 2021) state that technology can adapt and customize learning environment by adding several functions to graphically organize learning content. Developmental studies state that visual language skills are formed before the verbal language, so children will start with reading images. The use of visuals helps the teacher clarify, establish, correlate and coordinate accurate concepts, interpretations and appreciations, and enables him to make learning more concrete, effective, interesting, inspirational, meaningful and vivid (Pateşan et.al., 2018). Visual aids are basically important tools when it comes to facilitating understanding/language and grammar comprehension.

Research methodology

As shifting to a digitalized learning environment is exponentially playing an important role in education nowadays, moreover after the pandemic crises. The present paper focuses on the impact of the use of (electronic) visual aids in language teaching-learning in primary school. A research methodology was derived to investigate the effect of some visual aids (flashcards, printed and on a digital format) used in language learning on development of communication skills. From a practical perspective, this will help teachers to use appropriately the online tools available for learning content in accordance with the cognitive mechanism of primary school students and adjust the exposure to online learning and avoid cognitive load.

The *aim* of the paper was to investigate the implications of the electronic visual aids as effective teaching-learning tools in language-oriented activities/lessons in primary school settings. Moreover, it was explored the teacher perception on using both printed and online-format of flashcards during their language lessons. The following dimensions (i.e., learning concepts, technical features, learner characteristics, interaction experience, learning

experience, learning process, and learning outcomes) of learning while using in classroom settings visual aids developed during *Flashmind* project.

Research questions

The main research questions addressed in this paper are as follows:

- RQ1 To what extend visual aids (printed and digital-format flashcards) facilitate concept comprehension and vocabulary memorization?

- RQ2 What are the important instructional design principles in organizing language learning activities by integrating printed and digital-format flashcards to promote a better communication?

- RQ3 What is students' most preferable type of visual aids: printed or digital-format flashcards?

The hypothesis to be confirmed in the end of the research is if visual aids could significantly show improvements in attracting students' attention, facilitation concept comprehension and vocabulary memorization, enhancement of teacher-students and student-student communication.

Research design

It was designed a questionnaire to collect qualitative and quantitative data about the way children in primary school and their teachers relate to the extended usage of these tools during their language learning activities. We collected data from an initial study in which 13 in-service teachers for primary school education to pilot flashcards created during the *Flashmind* project and to learn how to create flashcards in online format and integrate them into their classrooms. The overall goal of the project was to document the experiences of teachers and students as they implemented their flashcards: for teachers to offer support in teaching and content delivery. At the beginning of the project, the 15 teachers participated in a workshop where they (a) tried the already existing 25 sets of flashcards (250 flashcards) created for reading, and (b)started to practice flashcards creation for their future educational activities on development of language skills. The in-service participants' years of teaching experience ranged from 1 to 13 years, with

an average of 7.5 years. All of the participants reported a willingness to try out the existing flashcards (online and printed) in a classroom setting. Three of the teachers reported that they had used flashcards in their classroom as a regular practice.

Data Collection

Multiple sets of data were collected throughout the research study. At the beginning of the first workshop, the participants filled out a survey about their choices when it comes to the incorporation of visual aids in their teaching practice. A questionnaire, the "Use of printed and digital flashcards in enhancing communication development and the use of new vocabulary" was developed in Romanian for this study. The questionnaire consisted of four factors: type of flashcards, activities when flashcards were used, teacher self-efficacy, communication, and interaction. A response rate of 94% were obtained. Partial least-squares regression was employed to analyze the sample data and test the statistical effects of the mediators. We collected observational data during the piloting the flashcards and encouraged participants to fill out surveys to explore how teachers perceived those visual aids and modeling into their lessons. Form the 15 participants of our study group, 7 participants implemented the digital flashcards in their classrooms and other 6 of the printed ones and then followed up with 30-minute focus-groups with the two groups of participants. During the interviews, participants were asked to describe, reflect upon, and evaluate their lessons, students' engagements and assess students' performance. Also, the researchers took field notes about children's learning and children's reflections., thy used multiple observations to identify children's behaviors while using flashcards. A post-test questionnaire was used to collect information concerning students' attitudes toward their learning environment and the time taken to complete a group problem-solving performance was recorded. They were asked to share what their feedback on what worked better, how long were students

engaged in working with flashcards, what challenges they faced, and what advice they could give to increase their impact. We also organized short interviews with students to evaluate their attitudes towards learning wit flashcards and their engagement in the lesson. It was investigated children's learning experiences with their teacher using digital and printed flashcards. And teachers were observed as producers of knowledge to be shared with their students and content designers. One aspect that this study reflected in children's learning experiences is the mismatch between children's expectations and those of their teachers.

Data Analysis

Most of the respondents (40%) were between 40 and 49 years of age, whereas some (20%) were aged between 30 and 39 years. Most of the respondents (60%) also had university degrees, and 80% of the respondents had more than 15 years of experience working in primary school education. In addition, all of the teachers reported that they had been used printed flashcard to teach new vocabulary mostly in learning foreign languages to primary school students, but only 20 % of teachers used digital flashcards in their activities for about 1 to 2 years.

The survey instrument had 20 items to which the respondents expressed their feelings of agreement or disagreement according to a five-point Likert scale (1 = most strongly disagree to 5 = most strongly agree). The variables measured were: attitudes of teachers towards the use of flashcards, the access and engagement in flashcards objectives, content and design; attitudes toward the willingness and engagement of incorporating flashcards in their classrooms; their perceptions of the efficacity of flashcards on student's language acquisition; assessing the interaction and communication between teachers and students and peers-student's interaction. The results showed that some teachers are developing their own pedagogical instruments to adapt the content to children's needs and learning experiences and one way is by integrating flashcards in their

teaching practice. It was identified several metacognitive strategies in the flashcard design of their technology-integrated practices, implement appropriate strategies to reach the students, and assure the alignment between technology-enhanced instructional practices and adaptations made for children. Teachers or researchers could map out the relationship between each component and the activity within their pedagogical reasoning/instructional design processes. This would help them to determine what connections exist between and within various components of the pedagogical reasoning and instructional design processes, from which they could identify whether and how much they embrace children's voice.

A total of 294 students, working alone or in groups, from the classes of 13 teachers involved in the project participated in the activities proposed, for 153 of students - language learning activities where build up by using digital flashcards and for 141 students with printed flashcards. For the beginning we realized a very short oral interview with randomly chosen 50 children aged 7 to 12 years old. The questions referred to their preferences when it comes to spending free time or to those activities which relax them at the highest degree. Summarizing the answers, we concluded that web browsing devices (desktop computers, mobile phones, tablets, smart TVs, game consoles, wristwatches, Ebook readers, digital cameras) and computer games overpass by far physical manipulation of the objects. In this context, the teacher`s task is to find a bridge to get to children interest and by catching his interest to reorient child attention and build up competences that will make him more able to learn and to develop those skills needed to engage in learning. Following the informative discussion with the pupils, together with 6 primary-school teachers (for digital format of flashcards) and 7 primary-school teachers (for printed format of flashcards) tested the program developed during *Flashmind* project. Around 294 students took part into the research and experienced a period of 12 weeks of visual enhances teaching practiced. Mainly visual aids were used to help associative learning to take place

(image to a word, image to a type of emotion, image to previous life experiences, image to previous language contexts, new vocabulary memorization and retrieval).

Findings and observations

The findings are structured to present the general characteristics of flashcards creation and some didactic principals in integrating them into language learning activities. At the end of the study teachers traditionally showcased their understanding of the topic by creating a set of flashcards for topics related to curriculum for primary school education on reading. Students participating in the activities that included printed flashcards, which allowed a physical manipulation of those flashcards expressed more positive attitudes toward their learning environment than students participating in activities based on digital flashcards use. It is necessary for the introduction of visual aids, flashcards in digital format to provide guidelines to support teachers' abilities to leverage learner analyses to ensure all the necessary adaptations to increase learning effectiveness.

The qualitative analysis results in students' feedback and learning experiences that may inform future instructional designers of educational technology with ways to relate teachers/practitioners and children when creating advanced online digital learning materials and how to integrate them into the classroom practice so that they won't hinder physical participation and engagement in authentic social interaction. The main advantage reported by teachers and students as well as the independence in using flashcards in their out-of-class environment, and the opportunity to access and practice the new vocabulary even if the teacher or the adult is not present. Students reported positive attitudes towards combining learning task (memorizing a poem or a song) by adding flashcards of "new words" or "difficult concept" with flashcards. As well, students reported and teachers confirmed significant improvements in concept comprehension and more positive retrieval of new words in their peer

communication while adding flashcards in their learning activities (others then only foreign language learning classes).

This research finding shows that students prefer using digital flashcards to printed one, that can be explained by the novelty element and a more enhanced ways of accessing information (the visual and visual-auditory element). Teachers increased their engagement in content creation while participating in the project, while piloting the existing series of flashcards, the reported more active engagement with the content to be taught by trying to find the best way (the best visual content delivery) to improve students' comprehension, retention and transfer to their experiences. According to the results, they have positive attitudes toward introduction of printed and digital flashcards during their language learning activities and the expand the use of flashcards to other school subjects. in mobile communities. During focus-groups teachers expressed more collaborative work and creating collaborative activities for sharing their pedagogical experiences in flashcards creation and exchange insights and build up a common library of flashcards. It was reported an increased in exchanged of collaborative practices that boost mutual professional development.

Limitations of the Study

More empirical studies are needed to examine how technology-enhanced teaching and learning materials support children's learning and teachers should incorporate digital tools to create and support meaningful learning processes, what are the needs of teachers with regard to professional development to acquire the know-how in designment of those materials and their incorporation in instructional practice. Additional research is needed to explore the extent in which online and digital teaching materials can be used in early childhood education and its impact on further student development.

Conclusion

This study suggested that teachers need to analyze how learning materials should be designed and to extract the features of the learning elements contributing to improving student learning performances and outcomes. The results of the data analysis showed learners' positive attitudes toward learning activities that included flashcards (printed and digitals) (satisfaction or perceived usefulness), and it was also found some improvement in student outcomes on vocabulary building. Visual aids are important tools in teaching-learning process, and digital tools bring a link between visual and audial elements which with an appropriately chosen and designed approach can stimulate motivate and engage students in class instructional activities, thus enhancing learning. Integration of technology into classroom help the teachers explain concepts and ideas in a meaningful close-to-real-life way by providing a "hands-on" learning, with the limit to delay the digital tools in early education where physical reality manipulation should be priority, even though it might come with more effort, resources, work-load for teachers. The risk is that digital and virtual tools can easy the preparation and it might increase the dependence on them in teachers in detriment of physical experience learning experiences. Some advantages of digital learning models (omnipresence, access, independence) can be incorporated in the process of designing teaching and learning materials to enhance new vocabulary learning and comprehension. A „hybrid system" (Prilipsky & Zaeva, 2020) would provide learners and teachers with an access to a wide range of learning experiences.

Funding

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