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The SAMR Model in Creating a Digital Language Learning Environment for Early Elementary School Children

Model SAMR w kreowaniu cyfrowego środowiska uczenia się języka obcego przez dzieci w wieku wczesnoszkolnym

KEYWORDS

elementary school-aged children, foreign language learning, distant education, hybrid education, SAMR model, digital tools

ABSTRACT

One of the basic tasks of school at the elementary education level, related to the preparation of a good literacy foundation for the acquisition of a foreign language by children, requires teachers to support the development of the child's learning mechanisms through the conscious use of methods and tools derived from information technology that are adapted to the needs and capabilities of the child at this stage of life. The undertaken research aimed to use the assumptions of the SAMR model in supporting children in grade 2 of elementary school with a foreign language in a situation of exclusively remote and hybrid education.

Based on Ruben R. Puentedura's (2013) SAMR model, the action research study used digital tools to engage children in activities using different forms of digital stories.

The research indicates that the learning of the children was optimized in the hybrid form. It turned out that using digital tools produced better results than purely remote learning. The conclusions resulting from the research conducted in a small group of children (thus difficult to generalize) will serve as an inspiration to outline further research perspectives in the analyzed area, including the construction of a model for experimental research.

SŁOWA KLUCZE

dzieci w wieku wczesnoszkolnym, uczenie się języka obcego, edukacja zdalna, edukacja hybrydowa, model SAMR, narzędzia cyfrowe

ABSTRAKT

Jedno z podstawowych zadań szkoły na poziomie edukacji elementarnej, związane z przygotowaniem dobrych podstaw alfabetyzacji w zakresie nabywania przez dzieci języka obcego, wymaga od nauczycieli wspierania rozwoju mechanizmów uczenia się dziecka poprzez świadome wykorzystywanie dostosowanych do potrzeb i możliwości dziecka w tym okresie życia metod i narzędzi wywodzących się z informatyki. Celem podjętych badań było wykorzystanie założeń modelu SAMR we wspieraniu dzieci z klas 2 szkoły podstawowej w nauce języka obcego w sytuacji edukacji zdalnej oraz hybrydowej. W badaniach *action research*, opierając się na modelu SAMR Rubena R. Puentedury (2013), wykorzystano narzędzia cyfrowe, które pozwoliły angażować dzieci w działania wykorzystujące różne formy cyfrowych opowieści. Badania wskazują na optymalizację uczenia się badanych dzieci w formie hybrydowej – wykorzystanie tu narzędzi cyfrowych dało lepsze rezultaty niż w uczeniu się wyłącznie zdalnym. Wnioski wynikające z badań prowadzonych w niewielkiej grupie dzieci (trudno tym samym je uogólniać) posłużą jako inspiracja do nakreślenia dalszych perspektyw badawczych w analizowanym zakresie, w tym do skonstruowania modelu badań eksperymentalnych.

Introduction

Digital competences that are expected today go far beyond the traditional computer literacy and technology proficiency. These skills are still needed, but they are no longer sufficient at the time when IT is becoming the common language of almost every field and equipping them with new tools.

The time of the COVID-19 pandemic, which introduced remote education into schools along with the first lockdown, unfortunately showed that previous educational practices, which made little use of the potential of new technologies (Jaskulska et al., 2021), had not laid the foundations for effective learning. This was particularly evident in the education of preschool and early school-age children.

Some foreign language teachers have no doubt that in today's world, where the teacher meets the Alpha generation children (McCrindle and Fell, 2021), the importance of multimedia tools in language education is also increasing (Galan and Półtorak, 2019), but this is mainly visible in older classes of the primary school.

Preparing early school-age children to learn a foreign language using digital technology tools requires, above all, teachers to build strategies based on the process of individualisation. Such strategies should take into account the child's potential as well as cognitive and emotional-social resources; they should also develop cognitive curiosity that reinforces their motivation to learn. When creating a project integrating

new technologies into the process of learning/teaching a foreign language to early school-age children, which would optimise this process both during remote and hybrid learning, the researchers were trying to find the answer to the following question: Which digital tools will make it possible to develop the child's communication skills, help him/her remember whole phrases and expressions, improve spelling, and encourage them to listen with understanding? The researchers realised that the challenges and goals set for the child should also facilitate integrating language learning with children's digital competences and their different learning experiences. To answer this question, the potential of selected digital tools to support early school-age children's foreign language learning was explored, using the assumptions of Ruben Puentedura's SAMR model (2006, 2013).

Preparing early school-age children to learn a foreign language and develop digital competence

Issues related to foreign language learning in early childhood education in Poland are included in the core curriculum for grades 1-3 (Regulation..., 2017), which indicates that students should be able to use not only the basic set of linguistic means related to themselves and their immediate environment, but they should also be able to identify what they have learned and know how to improve the language independently (Regulation...., 2017, p. 49), and how to use information sources in a modern foreign language (e.g. picture dictionaries, booklets), also by means of information and communication technology (Regulation..., 2017, p. 49).

While analysing the content of the selected entries, it should first be noted that, at this stage of education, in which language learning through imitation is predominant, children begin to laboriously construct a mental representation of language. Thus, the awakening of language awareness should be based on specific methods and children's activities adequate to their cognitive maturity (which may or may not be related to the child's age), language and communicative competence.

It seems that the tasks of learning/teaching a foreign language can be clarified at this stage by pointing to three aspects:

- initiating statements of a metalinguistic nature;
- raising awareness of the rules of language use in sociocultural contexts, especially the rules of linguistic etiquette, which is directly related to training cultural sensitivity (Coyle, 2005);
- awakening and sustaining interest in languages and their functioning (in German, the term *Sprachaufmerksamkeit* – attention to language – is used in this context) (Nauwerck, 2005, p. 37).

While analysing the core curriculum, however, it can be seen that it sanctions a rather traditional methodological concept consisting in a reduction of the linguistic dosage (e. g. "very simple commands", "simple rhymes"); the linear introduction and reinforcement of foreign language words from specific subject areas in isolation by means of pictures, props, etc.; verbal communication limited to naming people, animals and objects, as well and their characteristics or activities related to them (they are often separated from authentic situations and children's communication needs which is why such exercises are often done without special emotional involvement and interest); developing imitation speech by multiple, mechanical repetition of short texts; and the "playful" nature of activities the real purpose of which is to mechanically imitate the learning content in order to consolidate it. Some critics of early childhood language education have for many years pointed out that the suggested games and songs are often merely "decorations" of foreign language classes, used in order to give the impression that language learning has been adapted to the predispositions of children at this stage of life (Rück, 1990, p. 218). In practice, the playful nature of the activities (lessons) has little impact on the effectiveness of teaching, because (as suggested by research results) language is not processed by the child with the necessary emotional involvement and attention during the implementation of imitative exercises, the recitation of rhymes, etc. (Yuan et al., 2022).

Thus, the concept of language teaching that relies on low cognitive activity on the part of the child learner and imitative forms of speaking as a response to the teacher's way of teaching seems incompatible with the constructivist perspective on learning currently favoured in education (Tomasello, 2006).

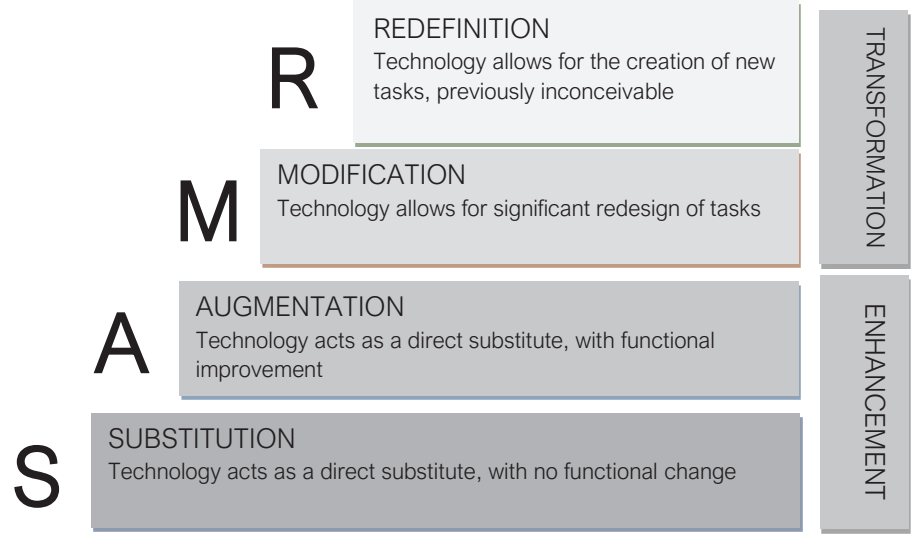
For a teacher teaching a foreign language to early school-age children, it is important to know how to act so that the elements of the unfamiliar linguistic code are decoded and mentally processed by the children. For this to happen, they must be immersed in a specific situation which is transparent to the children, or in an interaction in which movement, sensory experience and thinking are combined, on the basis of which the children make subjective, sensory-linguistic discoveries. These conditions are best met by texts with an interesting storyline (Yang, 2013). Such a role is fulfilled by e. g. digital stories which, if only chosen appropriately, can prove very useful in developing children's listening and speaking skills.

The power of storytelling in language acquisition can be significant for the foreign language a child is learning. Over the years, research has demonstrated the benefits of storytelling and language development in children and confirmed that, as a result of using those methods, children show more advanced language skills in vocabulary, syntax and sentence formation (Rahiem, 2021, pp. 1–20).

Active learning in distance education: using the principles of the SAMR model

The SAMR model developed by Ruben Puentedura (2006, 2013) can be helpful in understanding the place and importance of technology in language education at the early childhood level. This model, on the one hand, describes different ways in which technology is used in teaching and, on the other hand, it also shows how the most constructive change takes place from technology used in the teaching process incidentally and in a narrow functional scope (as a substitute for traditional forms of instruction) to a real transformation of teaching in which, due to the function performed by ICT (information and communication technology) in classes/ lessons, it becomes redefined. By analysing the four levels of SAMR, also the foreign language teacher can learn to better select task sets for children/students.

Fig. 1. SAMR model by R. Puentedura



Source: the author's own work.

1. At the level of **Substitution**, computing devices are used to perform the same tasks that were also performed before computers became equal educational tools: these situations are characterised by a lack of functional change. Most often, substitution occurs in an educational process in which the teacher plays a dominant role. Receptive pupils participate in a kind of a one-actor theatre.

2. At the **Extension** level, computer technologies are used as effective tools for solving basic tasks/problems. E. g. instead of creating answers on paper, students answer questions on their mobile devices using apps. In the Puentedura model, this is the point at which the emphasis in the educational process starts to shift towards the learner, because, with the right quality of faster feedback, students can become more involved in the learning process.
3. **Modification** is the first level in which a departure from the traditional teaching model is evident: technology begins to play a significant role in the classroom. Here, it is natural to have a task where the role of the students is to prepare a speech on a specific topic, record it with a camera, trim it appropriately, edit it, add sound effects, etc. The result of the pupil(s) work can be presented to other pupils in the group, but also to a wider audience, e. g. parents, pupils from other classes, etc. A significant change in the use of technology is already visible: it is becoming indispensable for the task to be completed. The students' individual learning experience is also important, as they not only learn to communicate, but also develop digital skills in the process. The teacher gains the opportunity to give quick feedback, but also to configure and differentiate the tasks facing the students (thus, he/she can, without giving up individualisation, develop cooperation in teams and planning). These situations foster pupils' involvement and strengthen their motivation to fulfil the task.
4. At the level of **Redefinition**, computer technology enables students to carry out complex activities that also consist of tasks that could not have been predicted. An example can be an educational project involving the preparation of a film on a specific topic from the core curriculum, carried out by the whole class. Such a task requires division into teams, specification of different responsibilities, planning and group cooperation. The teams themselves have to obtain the necessary data and information, and the teacher's role is mainly to monitor the work schedule and moderate the learning process. In this case, the computer tools are essential for the success of the project, but they only remain tools useful for the students. Thus, the focus of the activities is not the teacher or the technologies, but the students.

The SAMR framework is a popular model in practical learning environments, as evidenced by numerous explorations and discussions on educational technology (see, for example, Rostkowska, 2019). However, there is a lack of research in the literature that supports a theoretical explanation of this framework (Hamilton et al., 2016, p. 435), which, as a consequence, requires critical reflection on the model in order to be able to interpret, understand and apply it reliably in practice.

Aim and method of research – digital storytelling in integrated education

The technology and materials used with digital tools vary considerably in terms of quality and the ability of teachers to use them at a particular stage of education. It seems important, therefore, for teachers to be able to "skilfully find and use technological tools" (Hobbs, 2010, p. 17). The main aim of the research was to improve the quality of early childhood foreign language learning delivered in a hybrid format (exclusively online and in the classroom, but using digital tools). Making this objective more specific, it examined:

1. The level of selected linguistic and socio-emotional competences of primary school second-graders learning English;
2. children's opportunities and needs connected with English language acquisition;
3. the challenges children face in learning a foreign language online;
4. The relevance of the introduction of new technologies to the online/offline foreign language learning process of the younger school-age child;
5. Children's behaviour in foreign language learning situations using multimedia tools;
6. The importance of selected digital tools for the development of competences related to the child's acquisition of English.

The action research used served to achieve practical solutions to the issues involved in demonstrating the possibilities offered by the thoughtful use of the SAMR model's assumptions in educational practice: the selection and use of multimedia tools based on digital stories were matched to children's developmental abilities and learning needs, laying the foundations of a strategy to unleash children's potential in learning a foreign language in the second grade of the primary school.

Using an action research method, the focus was on five stages:

1. Identification of the problem/challenges of learning a foreign language in a way that develops the child's language and digital competences in hybrid (online/offline) education;
2. Research reconnaissance: diagnosis of how primary school second-graders are coping with learning English;
3. Formulation of an action plan (a digital storytelling project taking into account the tools of new technologies and the principles of the SAMR model); in the context of the research objective the following questions were asked: How to integrate new technologies into the child's language education? Which tools should be used to make the activities interesting? What tools will develop the

child's communication skills, help them remember whole phrases and expressions, consolidate spelling, get children to listen with understanding?
4. Implementation of particular stages;
5. Monitoring and evaluation of the implementation process and the results obtained – changes in this respect were analysed on the basis of a questionnaire concerning the evaluation of different activities undertaken by the children and their confidence in their personal cognitive abilities and sense of agency (I am the author of events and changes) related to foreign language learning.

The study, in which 25 children (two groups) from the second grade of a mainstream school participated, was conducted during the 2020/2021 school year: the first phase from 1 September to 8 November 2020 was in normal mode (being aware of the intensification of COVID-19 and the inclusion of remote education, the focus during this period was on stages 1, 2 and 3); from 9 November to 22 December, teaching was conducted in remote mode; from 18 January to 28 February 2021 – it returned to the normal mode; from 1 March to 3 May in remote mode, and from this period until the end of June 2021 – in normal mode (stages 4 and 5).

The research using the assumptions of the SAMR model used applications that are already in use and available in most schools.

Digital slideshow

One option for digital storytelling was to use photographs to create a slide show. This form of working with children was chosen after an initial analysis of their English communication skills because: (1) It was adaptable to the needs of each pupil developing their skills in a new language – the teacher, supporting the children in language activity, was a facilitator (mediator) whose role was to improve the communication process in the group; (2) It was an activity that matched the extension level of the SAMR model, as, by using technology to enhance learning, children who are not yet ready to read and write in a foreign language were supported; (3) During this activity, the child developed his/her ability to listen to others, speak, write, and improved basic technical skills.

Pupils were able to tell their stories using basic words and phrases: the slide show was a kind of guide to the stories they told. The children performed the task independently and in groups.

Animation projects

Cinematic animation techniques were also used in digital storytelling in the classroom. The basic animation projects were designed to suit all the levels of children's skills and learning objectives.

The animation activities were able to reach the transformational levels of the SAMR model because the tools used in the animations allowed the children to create something completely new. In the case of language education, given that the pupils were just developing their technology and literacy skills, a collaborative classroom animation project was the best option.

Five films in English were created with the children. The films were short so that they could be easily viewed and shared with parents.

Results

The use of digital stories embedded in the framework of R. Puentedura's (2013) SAMR model allowed for the transformative use of technology in the learning/teaching of foreign language by/to early childhood children.

Table 1. Children's selected cognitive behaviours, their personal assessment of learning and their motivation to learn a foreign language in an online/offline environment (Class II, N = 25).

Selected children's cognitive behaviour, their personal assessment of learning and motivation to learn a foreign language	**I Phase of English classes without the use of digital tools (classroom teaching 1 September – 9 November 2020).**	**II. Phase of online/ offline activities using digital tools**	**III. Classes continuing from May to the end of June 2021 using digital tools – classroom teaching**
Assessing learning as ‚fun' in language acquisition	8	14	23
Motivation to interact verbally with others	10	20	24
Using the acquired language skills in a new context	6	14	17

Selected children's cognitive behaviour, their personal assessment of learning and motivation to learn a foreign language	I Phase of English classes without the use of digital tools (classroom teaching 1 September – 9 November 2020).	II. Phase of online/ offline activities using digital tools	III. Classes continuing from May to the end of June 2021 using digital tools – classroom teaching
The willingness to seek and gather information from various sources	7	12	18
Fear of the communication barrier	11	3	1
The ability to listen	9	16	22
Making attempts to speak in a foreign language	14	19	24
Use of familiar words in natural situations and social contexts	11	16	21
Attempting to read in a foreign language	9	12	21
Attempts to read books from the library/online in a foreign language	3	9	16

Source: the author's own research (research results do not add up to 100% as changes in separated aspects affected many children)

The digital tools offered to the children fostered their individualised learning strategies, their cognitive curiosity and motivation to engage in self-directed activities related to foreign language learning, which was influenced by their evaluation of their sense of self-efficacy. The use of digital stories increased the attractiveness of the activities and was reflected in the children's level of motivation to communicate in a foreign language.

Summary and implications for pedagogical practice

Educational technologies are tools that can develop and activate any student's learning, but the process of integrating technology into foreign language teaching is complex, as access to digital tools is needed, as well as an understanding of educational practices that support technology integration (Miranda, Russell, 2011).

On the basis of the research in action, it should be emphasised that a teacher who is aware of the possibilities of educational technology should, on the basis of his knowledge of his students (their capabilities and limitations), create his/her own set of tools for the students to use. He or she should also reflect on whether he/she is making optimum use of the tools available in the classroom (and in students' homes). It may also be advisable to think about more complex tasks for the students. This is where the SAMR model can be helpful. It can certainly help in the transition from education 1.0 (S, A) to education 2.0 (M), 3.0 (R) and 4.0 (Siemieniecka, 2021, pp. 227–250).

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