TUDÁS MENEDZSMENT

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INNOVATIVE WEGE ZUM WISSENSTRANSFER

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Humán Fejlesztési és Művelődéstudományi Intézet periodikája

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Contact:
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http://btk.pte.hu/hu/hfmi/tudasmenedzsment
E-mail: tudasmenedzsment@pte.hu

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Editor's preface

Welcome to the third foreign language issue of our journal! As usual, we have collected articles around a special topic, which in this case is innovation in knowledge transfer. The authors in our special issue deal mainly with pedagogical aspects of the topic. You can read about new methodological projects, and studies about special educational researches.

Today innovation is getting more and more important, since education of new generations requires innovative methodologies. One of these innovative ways can be for example gamification, like the escape rooms. The newest innovation is the application of artificial intelligence in education.

Our German language article is dealing with this topic. In the research project students studying in teacher education were given the task to play the role of a chatbot. In the article you can read about the results of this experimental project, which is based upon the theory of multiple intelligence.

Another article is about an elementary school health education project, where health education is combined with environmental education and sustainability. Environmental and health education is supported by project work, highlighting sustainability and the importance of environment protection. The novelty of the pilot environmental education project - presented in this paper - is the module focusing on environmental hazards, which is an extracurricular topic.

András Béres and Ágnes Bálint give us a proof that 21st century teaching methods, like escape rooms result heightened engagement of Z generation students compared to traditional frontal education. There is a positive correlation between escape room methodology and students' performance. The gamification experiment was done in geography subject.

Attila Tibor Kovács examined the importance of metalinguistic awareness in understanding written texts. It is a very important issue in language education. With a 15-task test metalinguistic knowledge related to compound and suffixed words was neasured. By quantitative content analysis, the study gives a great help to the development of native language methodology and grammar teaching in lower primary education.

Gabriella Kállai is dealing with special needs childrens' education, especially in teamwork of the educators. The research is focused on the experiences of the kindergarten teachers and special education teachers, and their online communication.

Of course innovative methods can be found in higher education also, and you can read about them, too. For example about self-directed learning in business education.

Richárd Fekete is dealing with childrens' literature research in Hungary. It is specially important topic, sincet here are quite few English language publications about Hungarian children and youth literature, though it deserves more attention. I kindly recommend this article for those who are interested in the topic.

Last but not least you can read a very interesting article about the impact of resource-based-view on family business research.

All publications are written by Hungarian professionals, for them this is a great opportunity to publish in foreign languages. For us this is also a great opportunity to appear on the international scene, and this way get into the international professional communication. We are waiting your publications for the next year issue, and of course we are very much open toward publications from other countries also.

September, 2024
Katalin Varga
chief editor

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Tudásmenedzsment Vol. 25, Special Issue 1, 5–22 (2024)

Szilvia Petzné Tóth – Orsolya Dőryné Zábrádi – Judit Siposi

*MÖGLICHKEITEN DES EINSATZES VON CHATBOTS FÜR DEN GRAMMATIKUNTERRICHT IN DER LEHRER*INNENAUSBILDUNG*

Abstrakt

Die Bildung, der Prozess des Lehrens und Lernens, befindet sich heute in einem starken Wandel. Die Kompetenzen des 21. Jahrhunderts betonen zunehmend die Bedeutung von Zusammenarbeit, Selbstentwicklung und lebenslangem Lernen. Darüber hinaus entstehen neue Informations- und Kommunikationstechnologien, und das Potenzial für den Einsatz künstlicher Intelligenz in der Bildung wächst. In der Lehrer- und Lehrerinnenausbildung wird der Unterricht in Semantik und Grammatik (Wortschatz, Morphologie, Syntax) im Kurs Ungarische Sprache II mit der Entwicklung des algorithmischen Denkens in der Mathematik kombiniert. Wir haben neue Methoden eingeführt, um die Motivation, die Zusammenarbeit und die multiplen Intelligenzen der Student*innen zu fördern und Raum für die Integration zwischen den Fächern zu schaffen. Um den traditionellen Unterricht zu überdenken und die Fähigkeiten der Student*innen zu entwickeln, haben wir ihnen die Aufgabe gestellt, die Rolle eines Chatbots zu übernehmen. Nach der theoretischen Einführung wurden die Studierenden mit dem Entscheidungsbaum und NLP-basierten Chatbots vertraut gemacht. Dann bekamen sie zwei fiktive Themen zur Auswahl (Terminvereinbarung in einer Schule oder in einem Studienbüro) und mussten nach der Definition der Ziele den Denkalgorithmus, das Flussdiagramm und den Entscheidungsbaum für die Chatbots erstellen. Eine Grundvoraussetzung für all diese komplexen Aufgaben ist ein gründliches Verständnis der Struktur der Sprache, die wir mit dieser Kursanpassung veranschaulichen wollten. In diesem Schreiben werden die Beschreibung und die Ergebnisse dieser experimentellen Forschung sowie die komplexe Förderung der Student*innen auf der Basis von multiplen Intelligenzen zusammengefasst.

Schlüsselwörter: Algorithmisches Denken; Künstliche Intelligenz; Grammatik

Abstract

Education and the process of teaching and learning is undergoing a major transformation today. 21st century skills increasingly emphasize the importance of collaboration, self-development and lifelong learning. In addition, new information and communication technologies are emerging and the potential for the use of artificial intelligence in education is growing. In teacher education, the teaching of semantics and grammar (vocabulary, morphology, syntax) in the Hungarian Language II course is combined with the development of algorithmic thinking in mathematics. This provides space for integration between the subjects and the theory of multiple intelligences. By rethinking traditional teaching, we gave the students the task of playing the role of a chatbot. This paper summarizes the

description and results of this experimental research, as well as the complex support for students based on multiple intelligences.

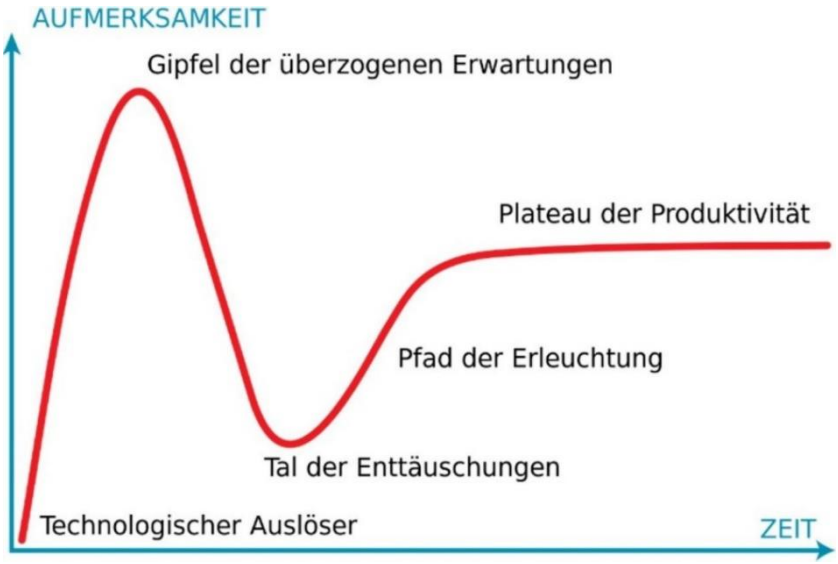
Keywords: algorithmic thinking; artificial intelligence; grammar

Einführung

Dank des wirtschaftlichen und sozialen Wandels unterliegen auch die Bildung und der Lehr- und Lernprozess einer Reihe von Veränderungen. Kooperation, Gruppenarbeit, Selbstentfaltung und lebenslanges Lernen treten an die Stelle des Frontalunterrichts. Der angemessene Einsatz neuer Informations- und Kommunikationstechnologien und die zunehmende Verbreitung von künstlicher Intelligenz setzen sich auch im Bildungswesen durch. Die heutigen modernen Lern- und Lehrtheorien gehen weg von genau definierten geschlossenen Fragen und hin zu offenen Fragen (Mabbott & Bull, 2007). Durch Gruppenarbeit und Zusammenarbeit reorganisieren die Lernenden ihr vorhandenes Wissen, um zu verstehen und zu lernen. Im akademischen Jahr 2022/2023 wurde der Kurs Ungarische Sprache II. an der Széchenyi István Universität, Apáczai Csere János Fakultät für Pädagogik, Geistes- und Sozialwissenschaften für Lehramtsstudent*innen angepasst und mit der Entwicklung des algorithmischen Denkens im Rahmen der interdisziplinären Integration kombiniert. In unserer Forschung haben wir die Grundlagen der künstlichen Intelligenz (KI) und in diesem Rahmen die Funktionsweise von Chatbots genutzt.

In der sich schnell verändernden Welt, in der wir leben, ändern sich sowohl die Bildungsmethoden als auch die technologischen Fortschritte um uns herum rasch. Verschiedene Techniken und Methoden haben die Angewohnheit, nach einem schnellen Aufschwung langsam auszusterben und sich auf ein normales Niveau einzupendeln. Dies wird am besten durch den so genannten Hype-Zyklus nach Gartner veranschaulicht. Die Erwartungen an Technologien, die in den Medien oder im öffentlichen Diskurs geäußert werden, beschreiben im Laufe der Zeit eine bestimmte Kurve, die fünf "Hype-Phasen" durchläuft, nämlich:

Abbildung Nr. 1: Hype-Zyklus



Quelle: Dancs, 2019

Wenn eine neue Technologie eingeführt wird, wächst das Interesse an ihr, und sie wird immer mehr zum Gegenstand des öffentlichen Diskurses, auch wenn wir in der Regel noch nichts Konkretes über sie wissen oder sie noch nicht ausprobieren können. Dann, wenn die Zahl der Menschen, die mit dem neuen Werkzeug oder Programm vertraut sind, exponentiell wächst, werden auch die Medien in die Erfolgsgeschichte einbezogen, mit aufeinander folgenden Nachrichten über fantastische Durchbrüche, und mögliche Probleme und Fragezeichen in Bezug auf die Technologie werden noch nicht angesprochen. Später, nach dem anfänglichen Enthusiasmus, nehmen die Probleme der Unreife zu, das Produkt erfüllt die hochgesteckten Erwartungen nicht, die Innovation entwickelt sich langsamer. Der Umfang und die Art und Weise, in der die Technologie genutzt werden kann, werden anspruchsvoller, wobei die Technologie mit zunehmender Effizienz immer weiter verbreitet wird, während kritische Nutzer vorsichtig bleiben. Wenn das Produkt Teil des täglichen Lebens wird und seine Vorteile deutlich werden, wird seine Nutzung leicht zunehmen (Dancs, 2019).

Die gleiche Denkweise lässt sich auf die Welt der KI anwenden, einschließlich der Verwendung von Chatbots. Plötzlich wurde sie zu einer großen Sensation, und dann verlor sie das Interesse der Menschen. Nachrichten über ihre Nachteile und Gefahren tauchten auf. Um sie optimal nutzen zu können, müssen wir unsere Lehrpläne und Methoden überdenken und überlegen, wie wir uns an diese neuen Technologien anpassen können. Chatbots, was den Hype-Zyklus betrifft, befinden sich also derzeit in einer Phase zwischen Ernüchterung und Aufstieg. Diese Ernüchterung ist zum Teil auf eine berechtigte Angst vor Chatbots zurückzuführen, denn der fast unaufhaltsame Vormarsch der KI könnte zu ähnlichen Arbeitsplatzverlusten wie bei der industriellen Revolution führen, da Roboter viele Positionen übernehmen, die früher von Menschen besetzt waren. Darüber hinaus gibt es weitere Gefahren im Bildungsbereich: KI ist jetzt in der Lage, vollständige Hausarbeiten, Gedichtanalysen, Lesejournale usw. und sogar andere Aufgaben zu erstellen, so dass die Lehrkräfte noch genauer auf die, bei ihnen eingehenden Hausarbeiten achten

müssen und mit einer "anderen" Plagiatsherausforderung konfrontiert werden, als sie es bisher gewohnt waren.

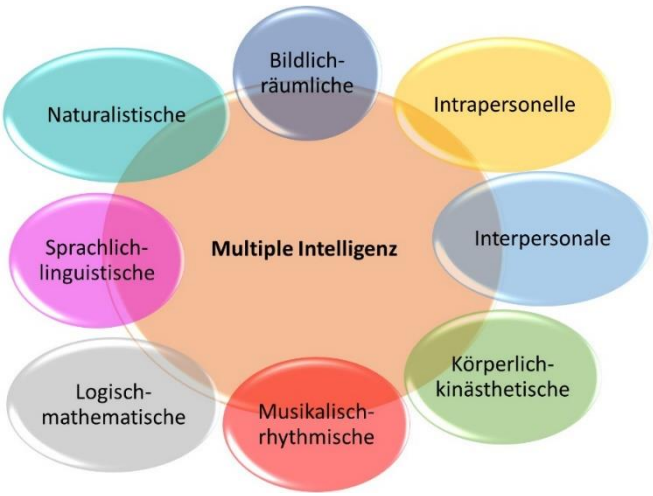
Dennoch bergen Chatbots in der Bildung auch viel ungenutztes Potenzial, das uns, wenn es erkannt und genutzt wird, zu einem neuen Höhepunkt der Aufklärung führen könnte. Deshalb haben wir uns bemüht den Student*innen beim Lernen des Lehrstoffes auch die moderne Technologie nahezubringen. Das Wissen ist umso sicherer, je mehr Intelligenzbereiche wir nach dem Gardner-Modell der multiplen Intelligenzen abdecken (Hajare et al., 2018). Bevor wir unsere Forschung beschreiben, stellen wir die methodischen Ansätze und Anwendungen vor, die wir verwendet haben.

Didaktische Methoden und Ansätze

Im akademischen Jahr 2022/2023 wurde der Kurs Ungarische Sprache II. experimentell überdacht. Erstens haben wir versucht, auf der Theorie der multiplen Intelligenzen aufzubauen, um so viele Bereiche der Bildung, wie möglich abzudecken. Obwohl wir hauptsächlich papierbasierte Hilfsmittel verwendet haben, haben wir auch einige IKT-Werkzeuge (z.B. Mentimeter) in der Gruppenarbeit eingesetzt. Schließlich, um alles zusammenzufassen, basierte die Grammatikstunde auf der Interpretation des Chatbot-Algorithmus.

Multiple Intelligenz

Abbildung Nr. 2: Modell der multiplen Intelligenz



Quelle: eigene Quelle

Der Begriff der multiplen Intelligenz wird in H. Gardners 1983 erschienenem Buch, Frames of Mind: The Theory of Multiple Intelligences verwendet. Die Pädagog*innen sollten den Unterrichtsprozess an die Lernenden anpassen, entsprechend ihren eigenen Interessen. Wie die Theorie der multiplen Intelligenzen belegt, ist jede Persönlichkeit anders.

Die Einteilung der multiplen Intelligenzen:

- Kinder mit sprachlich-linguistischer Intelligenz lesen und erzählen gerne Geschichten. Sie können sich Namen, Orte, Daten und Texte leicht merken.

- Kinder mit logisch-mathematischer Intelligenz haben ein ausgeprägtes deduktives und induktives Denkvermögen. Sie haben ein besseres Verständnis für abstrakte Systeme. Sie verfügen über ein hohes Maß an Problemlösungsfähigkeiten.
- Die bildlich-räumliche Intelligenz ist bei Kindern stark ausgeprägt, die gut mit Karten und Diagrammen umgehen können und Puzzles mögen. Sie sind gut im Zeichnen und Planen. Um neue Informationen verarbeiten zu können, brauchen sie ein mentales oder ein reales Bild.
- Die musikalisch-rhythmische Intelligenz ist bei Kindern stark ausgeprägt, die für musikalische Elemente empfänglich sind. Sie hören gerne Musik und können sich Melodien leicht merken.
- Bei der interpersonalen Intelligenz geht es um effektive Zusammenarbeit und das Verständnis für andere. Kinder mit dieser Intelligenz arbeiten gerne und gut bei kooperativen Aufgaben mit und haben Führungsqualitäten. Sie organisieren gerne.
- Intrapersonelle Intelligenz ist typisch für Kinder, denen es leichtfällt, ihre eigenen Gefühle und Ziele zu verstehen und zu leben. Sie haben ein ausgeprägtes Selbstbewusstsein und arbeiten gern allein.
- Kinder mit einem hohen Maß an naturalistischer Intelligenz sollten über die Natur lernen. Sie beschäftigen sich gerne bei Aktivitäten, die produktiv genutzt werden können, um etwas über die Flora und Fauna zu lernen.
- Die körperlich-kinästhetische Intelligenz ist bei Kindern ausgeprägt, die sich gerne bewegen und leicht Tanzschritte erlernen. Sie lernen auch Informationen leichter, wenn sie mit einer Form von Bewegung verbunden sind (Gardner, 1983).

Die Entwicklung multipler Intelligenzen basiert daher auf der Stärkung mehrerer Kompetenzbereiche. In unserer Forschung haben wir versucht, mehrere Fähigkeiten zu entwickeln, wenn auch nicht alle acht Bereiche. Unter anderem fokussierten wir auf die Förderung von der logisch-mathematischen, sprachlich-linguistischen, interpersonalen und bildlich-räumlichen Intelligenz. Der logisch-mathematische Bereich wurde durch die Konzentration auf das algorithmische Denken entwickelt. Der Grammatiklehrplan bildete die Grundlage für die Stärkung der sprachlich-linguistischen Fähigkeiten. Die Student*innen arbeiteten in Gruppen, um ihre interpersonalen Fähigkeiten zu entwickeln, und schließlich wurde auch die bildlich-räumliche Entwicklung gefördert, da sie ein Flussdiagramm erstellen mussten.

Pädagogische Anwendungen von KI und Chatbot

Bei der Planung des Bildungsprozesses muss man sich zwei Fragen stellen. Die eine ist das Was? und die andere das Wie? Die bereits erwähnte komplexe Entwicklung beeinflusste die Antwort auf die Frage Was? Unsere Entwicklung musste sich auf eine breite, tiefe und facettenreiche Bildung konzentrieren, da das Ziel nicht darin besteht, ein bestimmtes Fach zu unterrichten, sondern dessen Relevanz und Anwendbarkeit zu gewährleisten und die Motivation der Student*innen zu wecken und zu erhalten, sowie den Wissenstransfer zu fördern. In Interesse des nutzbaren Wissens sollten traditionell

relevante Lehrpläne selektiv angewandt werden, wobei der Schwerpunkt auf Kerninhalten und wesentlichen Konzepten liegen sollte, während gleichzeitig die Interdisziplinarität bei der Entwicklung von Fähigkeiten gewährleistet werden sollte. Die Frage Wie? kann uns helfen, die Fülle der aufgeführten Inhalte zu bewältigen.

Wie kann KI dazu beitragen, die Bildung zu verbessern oder gar zu verändern?

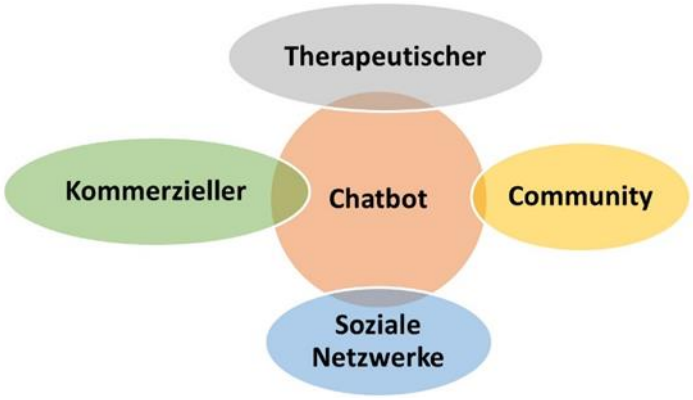
KI unterstützt das Lernen durch eine Vielzahl von Systemen, z. B. durch die Analyse der schriftlichen Arbeiten von Student*innen, die Gestaltung intelligenter spielbasierter Umgebungen, Chatbots zur Unterstützung der Studierenden, KI-gestützte Lehr-Lern-Funktionen zur Selbstverbesserung und zum Selbstlernen (Auer et al., 2018).

Künstliche Intelligenz ist eines der heißen Themen des modernen Lebens, über das jeder zwar oberflächlich viel weiß, aber nur wenig wirklich bekannt ist. Ein zentraler Bereich der Forschung über KI ist die Abbildung des digitalen Gehirns im Gegensatz zu Robotern, die sich bewegen können (Wolfné, 2017). KI kann auf viele verschiedene Arten in vielen verschiedenen Umgebungen eingesetzt werden. Einige Forscher ziehen es vor, sie als erweiterte Intelligenz zu bezeichnen, und behalten das menschliche Gehirn als Quelle der Intelligenz bei, während der Computer und seine Programme als hochentwickelte Werkzeuge verstanden werden. Bei diesem Ansatz werden Computer in Bereichen eingesetzt, in denen Menschen Schwierigkeiten haben, z. B. bei der Suche nach Mustern angesichts riesiger Datenmengen (Holmes et al., 2019).

Der Begriff Chatbot setzt sich aus den Wörtern Chat und Robot zusammen und bezeichnet einen Roboter, der mit jemandem sprechen kann. Ein Chatbot kann automatisch Fragen beantworten und im Internet nach Informationen suchen, ohne dass ein Mensch eingreifen muss. Verschiedene Unternehmen verwenden sogenannte Avatare, kleine Bilder oder Animationen, um den Chatbot weniger künstlich erscheinen zu lassen. Heutzutage nutzen Chatbots verschiedene Anwendungen der KI, um Unterhaltungen so reibungslos, wie möglich zu gestalten. So können Chatbots Informationen speichern, die sie nutzen können, um sich selbst zu unterrichten. So gibt es bereits Chatsysteme, die Bildung, Wissen, Kontrolle und Experimentieren unterstützen sollen. Ein solches System ist TuTalk, das auch für Leistungsbewertungen verwendet werden kann. In diesem Fall annotiert es Wissenskomponente, trennt verschiedene Initiativen, Antworten und Lösungen und kennzeichnet sie mit semantischen Tags. Dies ist notwendig, da die Maschine durch die Verknüpfung von Elementen mit ähnlichen Bedeutungen in der Lage ist, auf wiederholte Übereinstimmungen und Alternativen zu reagieren. Dieses System kann auch die bisherigen Leistungen der Student*innen bewerten (Luckin & du Boulay, 2007; Jordan et al., 2007).

Darüber hinaus gibt es verschiedene Arten von Chatbots. Sie werden vor allem aus Gründen der Effizienz entwickelt und sollten helfen, schnell Informationen zu erhalten: z.B. um Finanzen zu verwalten, Termine zu vereinbaren oder sogar Essen zu bestellen. Einige der möglichen Anwendungen von Chatbots sind in der folgenden Abbildung dargestellt:

Abbildung Nr. 3: Einsatzmöglichkeiten von Chatbots



Quelle: eigene Quelle

Im Bereich des Kundendienstes können Chatbots beim Online-Einkauf helfen, sind rund um die Uhr verfügbar und können sogar Geschenkideen vorschlagen oder prüfen, ob ein Produkt vorrätig ist. Für die psychologische und geistige Gesundheit bieten therapeutische Chatbots Unterstützung. Sie können Lernenden helfen, bei denen das Risiko besteht, dass sie Angstzustände entwickeln. Beispiele hierfür sind Eliza und Woe-bot. Es wurden auch Chatbots entwickelt, die zur Überwachung von Gemeinschaftsinteraktionen eingesetzt werden, wie z. B. Mitsuku. Diese Roboter können bereits bis zu einem gewissen Grad mit Stimmungsschwankungen umgehen, ihre Sprache spiegelt Tonfall und sogar Humor wider. Darüber hinaus gibt es bereits Chatbots auf Instagram oder Twitter, die automatisch Likes kommentieren. Bei diesem Chatbots gibt es im Gegensatz zu dem vorherigen keine Interaktion. Es ist sehr wichtig, sich der sozialen und ethischen Normen bewusst zu sein, und es ist immer wichtig zu wissen, dass die Person, mit der man chattet, keine wirkliche Person ist. Außerdem ist zu bedenken, dass Chatbots an sich zwar nicht gefährlich sind, aber aufgrund der großen Menge an gespeicherten Daten besteht die Gefahr von kriminellen Aktivitäten und Datendiebstahl. Die Anwender sollten sich von rassistischen und beleidigenden Kommentaren distanzieren (ENARIS, 2023).

Es gibt zwei Arten von Chatbots, je nachdem, wie sie funktionieren. Der erste, ein so genannter regelbasierter Chatbot, verwendet eine feste Klickstruktur. Der Nutzer kann keinen Text eingeben, sondern "klickt" sich einfach mit Hilfe von Schaltflächen durch die Konversation und folgt dabei einem vorgegebenen Flussdiagramm oder Algorithmus. Der andere basiert auf der Verarbeitung von Natural Language Processing (NLP). Für die Verwendung eines Chatbots, der auf der Verarbeitung natürlicher Sprache basiert, ist eine verbale Eingabe über die Tastatur oder die Stimme erforderlich. Der Chatbot analysiert die empfangenen Wörter und wandelt sie in Informationen um. Diese besteht aus Natural Language Understanding (NLU) und Natural Language Generation (NLG). Er erlaubt freie Texteingaben und basiert in der Regel auf der Verarbeitung natürlicher Sprache, was als prozessbasierter Chatbot bezeichnet wird.

Auf Entscheidungsbäumen basierende Chatbots können sich nicht an persönlichen Interaktionen beteiligen, da sie einem vorprogrammierten Prozess folgen, der sehr einfach oder komplex sein kann. Solche Chatbots verwenden vorausgewählte Widgets, um

verschiedene Antwortmöglichkeiten anzubieten. Die Benutzer*innen müssen aus vordefinierten Optionen wählen. Sie werden von Unternehmen eingesetzt, weil sie kostengünstiger einzurichten sind.
Der NLP-basierte Chatbot kennt die Bedeutung von Wörtern nicht, sie sind nur eine Ansammlung von Buchstaben. Wenn er einen Satz erhält, beginnt er, ihn strukturell zu analysieren. Die folgende Abbildung zeigt diesen Sprachverarbeitungsprozess.

Abbildung Nr. 4: NLP Prozess

Quelle: eigene Quelle

Alexa oder Google Assistant, die Sprachassistenten, funktionieren auf die gleiche Weise. Bei ihnen ist der erste Schritt die Spracherkennung. Diese wandelt das Mikrofoneingangssignal in eine Zeichenkette um. Anschließend erfolgt die Erstellung der einzelnen Strukturelemente auf die gleiche Weise.

Die Untersuchung

Die Untersuchung wurde mit 29 Vollzeitstudent*innen des zweiten Jahrgangs der pädagogischen Fakultät durchgeführt, die im Frühjahrssemester 2022/2023 im Pflichtkurs Ungarische Sprache II. eingeschrieben waren. Die Zusammensetzung des Kurses ist recht komplex: Sie umfasst Kenntnisse des Wortschatzes, der Wortsyntax, der Satzstruktur und des Textwissens. Der erste Teil des Semesters war der Grammatik gewidmet (Wortarten, Morphologie), und dann begannen wir, uns mit KI und Chatbots zu beschäftigen, während wir gleichzeitig mit der Arbeit an Sätzen begannen. Die erste Forschungsphase konzentrierte sich also auf die Entwicklung der sprachlich-linguistischen Kompetenz der

Student*innen. Darüber hinaus wurde der interpersonale Bereich ihrer multiplen Intelligenzen entwickelt, da in Gruppenarbeit viele grammatikalische Analysen gelöst wurden.

Im Rahmen des Kurses Ungarische Sprache II. wurden die Studierenden mit dem Konzept der künstlichen Intelligenz und der Funktionsweise von Chatbots vertraut gemacht. Ziel war es, eine komplexe Entwicklung des grammatikalischen und algorithmischen Denkens zusammen mit der Entwicklung von mindestens vier Bereichen der multiplen Intelligenz zu implementieren: die sprachlich-linguistische, die logisch-mathematische, die interpersonale und die bildlich-räumliche.

Beschreibung des Pilotkurses

Der Kurs Ungarische Sprache II. wurde angepasst und die oben genannten Methoden wurden eingeführt. Der Kurs deckt die gesamte Grammatik ab, d.h. die Student*innen erwerben Kenntnisse über die Grammatik der Wörter, die Morphologie, die Syntax und die Satzstruktur und analysieren diese. Die Vermittlung und Vertiefung semantischer Elemente wird durch den neuen und inzwischen allgegenwärtigen Chatbot eingeführt.
Der Prozess der Kursgestaltung:

1. Zunächst haben wir die Student*innen mit den Grundlagen der Grammatik vertraut gemacht (Wortarten, das Konzept der Silben und Subjunktionen, die Aufteilung von Wörtern in Wortbestandteile). In diesem Zusammenhang diskutierten wir die grammatikalischen Elemente, die Chatbots beobachten.
   — sprachlich-linguistische Intelligenz
2. Danach haben wir die Definition und Interpretation von KI diskutiert.
   — sprachlich-linguistische Intelligenz
3. Nach der Vorstellung der möglichen Anwendungen von Chatbots haben wir besprochen, wie Chatbots aufgebaut sind und nach welchem Algorithmus sie arbeiten.
   — logisch-mathematische Intelligenz
4. Dann wurden die Student*innen zu Chatbots. Eine Studentin spielte die Rolle des Benutzers und die andere Studentin den Chatbot. Die Studentin, die die Rolle des Live-Nutzers spielte, wollte einen Termin in einer Schule in einem fiktiven Fall buchen. Außerdem mussten sie einen Chatbot auf der Grundlage von Flussdiagrammen und NLP erstellen und ihn dann vorführen. Diese Aufgaben wurden durch gemeinsames Bearbeiten von Dokumenten gelöst. Die Flussdiagramm-basierte Aufgabe wurde auf Papier gelöst, während die NLP-basierte Aufgabe in einer Tabellenkalkulation gelöst wurde
   — interpersonale, logisch-mathematische und bildlich-räumliche Intelligenz

Die Ergebnisse des Pilotkurses

Nach der theoretischen Einführung und dem Kontext, in dem die Forschung durchgeführt wurde, wenden wir uns den Forschungsergebnissen zu. Nachdem die grammatikalischen Grundlagen gelegt wurden, wurde die Theorie anhand einer Präsentation vorgestellt.

Erlernen der Grundlagen der Grammatik (Entwicklung der sprachlich-linguistischen Intelligenz)

Alle natürlichen Sprachen sind aus verschiedenen Ebenen aufgebaut. Die unterste Ebene sind die Phoneme, also die Laute. Diese bilden die Wortelemente oder Morpheme (Dőryné, 2018). Die Wortelemente können in zwei Gruppen unterteilt werden: Silben und Suffixe (dies wird in unserer späteren Analyse wichtig sein). Wörter, oder Lexeme, bestehen aus Wortelementen. Wörter bilden Wortstrukturen oder syntaktische Strukturen, die die Bestandteile von Sätzen sind. Die Sätze bilden den Text, der die höchste der sprachlichen Ebenen darstellt. Die sprachliche Gliederung ist also wie folgt:

1. Ebene: Laute (Phoneme),
2. Ebene: Wortelemente (Morpheme),
3. Ebene: Wörter (Lexeme),
4. Ebene: Wortstrukturen (Syntaktik),
5. Ebene: Satz,
6. Ebene: Text.

Die Phoneme haben keine eigene Bedeutung, sondern nur eine bedeutungsunterscheidende Funktion. Ab Ebene 2 jedoch haben alle sprachlichen Elemente eine Bedeutung. Man kann auch sagen, dass jedes sprachliche Element seine endgültige Bedeutung auf der nächsten Ebene erhält, d. h. die Wortelemente in den Wörtern, die Wortstrukturen im Satz, die Sätze im Text usw.

Die Phoneme der Sprachebene 1 wurden bereits in einem früheren Semester mit den Student*innen untersucht, so dass in diesem Semester nur Morpheme, Lexeme, Syntax, Sätze (sowohl einfache als auch zusammengesetzte) und Texte analysiert wurden. Das Hauptaugenmerk in dieser Phase lag also auf der Entwicklung der sprachlich-linguistischen Kompetenz.

Erörterung der Merkmale der künstlichen Intelligenz

Da es schwierig ist, eine einheitliche Definition von künstlicher Intelligenz zu finden, wurden die Lehramtsstudent*innen des zweiten Studienjahres gebeten, in Gruppenarbeit ihre eigene Definition von künstlicher Intelligenz zu finden und zu beschreiben, was ihnen einfällt, wenn sie den Begriff hören. Sie arbeiteten in drei Gruppen und kamen zu den folgenden Antworten und Ergebnissen:

1. Die erste Gruppe assoziierte die Worte: Roboter, emotionslos und objektiv. Ihre Definition lautet: „*Er führt eine Tätigkeit aus, die von einem Programm gesteuert wird. Seine Anwendung ist nicht sicher, weil er gehackt werden kann, aber er macht unser Leben einfacher*".
2. Die zweite Gruppe assoziierte mit den folgenden Begriffen: emotionslos, allgegenwärtig, ein kleiner Fehler kann zu einem großen Chaos führen. Und ihre Definition lautete: „Von Menschen gemachtes, technisch programmiertes Wissen, Befehl".

3. Die dritte Gruppe dachte, wenn sie den Begriff künstliche Intelligenz hörte, an folgende Begriffe: Zukunft, Befehle, Verschwinden der Privatsphäre, Datenspeicherung, weit verbreitete Informationen, Ersatz von Menschen, Verlust von Arbeitsplätzen. KI wurde definiert als „*Computergestützte, gefühllose Roboter, die die Kontrolle übernehmen und quantitativere, aber qualitativ schlechtere Produkte herstellen*".

Nachdem wir uns ihre Ideen angesehen und diskutiert hatten, gaben wir ihnen die zusätzlichen Informationen, die sie brauchten, um weiterzukommen: Künstliche Intelligenz ist die Fähigkeit der Soft- und Hardware eines Computers, die Dinge zu tun, die wir Menschen als intelligentes Verhalten erkennen. Zum Beispiel kann KI aus einer großen Menge verfügbarer Daten ein passendes Material finden oder Muster erkennen und daraus Menschen oder Objekte mit ähnlichen Merkmalen finden. Die Gesichtserkennung beruht auf einem ähnlichen Prinzip und kann auch zusätzliche Tätigkeiten wie Überwachung, Signalisierung oder Alarmierung übernehmen. Ein Computer kann auch Handschrifterkennung durchführen, d.h. er empfängt und interpretiert verständliche handschriftliche Eingaben aus Quellen wie Papierdokumenten, Fotos, Touchscreens und anderen Geräten. Es gibt zwei Arten der Zeichenerkennung. Bei der einen wird das Bild des geschriebenen Textes offline von einem Blatt Papier durch optisches Scannen erkannt. Bei der zweiten wird die Bewegung der Stiftspitze online erkannt, z.B. auf dem Bildschirm eines stiftbasierten Computers. Die dritte Möglichkeit ist die Spracherkennung, bei der die Maschine gesprochene Wörter in Text umwandelt. Ein Beispiel dafür ist ein Callcenter-System, das jede Stimme erkennen kann.

Als Vorteil der KI wird oft angeführt, dass sie keinen Schlaf braucht und Probleme ohne Emotionen abwägen kann. Ein großer Nachteil und eine große Gefahr besteht darin, dass wir mit ernsten Problemen wie Arbeitslosigkeit konfrontiert werden, wenn Roboter anfangen, menschliche Arbeitskräfte in allen Bereichen zu ersetzen. Intelligente Maschinen sind vielleicht auch nicht die richtige Wahl für den Kundendienst. Viele Menschen befürchten, dass intelligente Maschinen den Menschen überwältigen werden.

In dieser Phase unseres Kurses haben wir sprachlich-linguistische und interpersonale Fähigkeiten entwickelt.

Wo treffen wir auf Chatbote?

Wir wollten wissen, was die Student*innen denken, wo sie einen Chatbot treffen können. Sie konnten ihre Meinungen in die Wortwolke der Mentimeter-App eingeben. Wie man in der Abbildung unten sehen kann, wird der Kundenservice am häufigsten genannt, obwohl er aufgrund der verschiedenen Wortformen an mehreren Stellen auftaucht, gefolgt von Websites und Anwendungen. Wir glauben, dass die Studierenden wissen, in welchen Bereichen KI-basierte Chatbots bereits eingesetzt werden.

Abbildung Nr. 5: Was Studierende über Chatbots wissen

Quelle: eigene Quelle

Erstellung eines Ablaufdiagramms

In der letzten Phase haben wir die vier oben genannten Bereiche der multiplen Intelligenz (die sprachlich-linguistische, die logisch-mathematische, die interpersonale und die bildlich-räumliche) methodisch miteinander verknüpft und uns auf ihre Förderung konzentriert (komposzt.wordpress.com, 2020). Wir haben die Student*innen gebeten, die theoretischen Grundlagen eines Chatbots selbst zu entwerfen. Die Programmierung eines tatsächlichen Chatbots ist nicht das Ziel unserer Messung, da dies den zeitlichen Rahmen sprengen würde, aber es würde auch über das Verständnis der grundlegenden Architektur von Chatbots hinausgehen, und unser Wissen über Informatik ist begrenzt.

Die Aufgabe, die die Student*innen zu lösen hatten, war eine fiktive Handlung. Sie konnten nach einem Termin in einer Schule für eine bestimmte Aktivität fragen, z.B. Sprechstunde vereinbaren, Mittagessen bezahlen. Sie konnten sich auch an die Studienabteilung der Universität wenden, um einen fiktiven Termin zu vereinbaren. Um eine Lösung zu finden, mussten sich die Student*innen zu Beginn Gedanken über den Zweck des Chatbots machen. Eine Studentin spielt die Rolle des Nutzers, die andere die des Chatbots. Die Studentin, die die Rolle des Live-Nutzers spielt, möchte zum Beispiel einen Termin mit einem Lehrer in der Schule vereinbaren und schreibt ihr Anliegen auf ein Blatt Papier. Der menschliche Chatbot scannt dann den Satz und wählt die wichtigen Schlüsselwörter aus seiner Tabelle aus. Der menschliche Chatbot kann anhand der Schlüsselwörter aus der Tabelle antworten. Findet der menschliche Chatbot keine Schlüsselwörter in der Tabelle, muss eine passende Antwort ausgewählt werden.

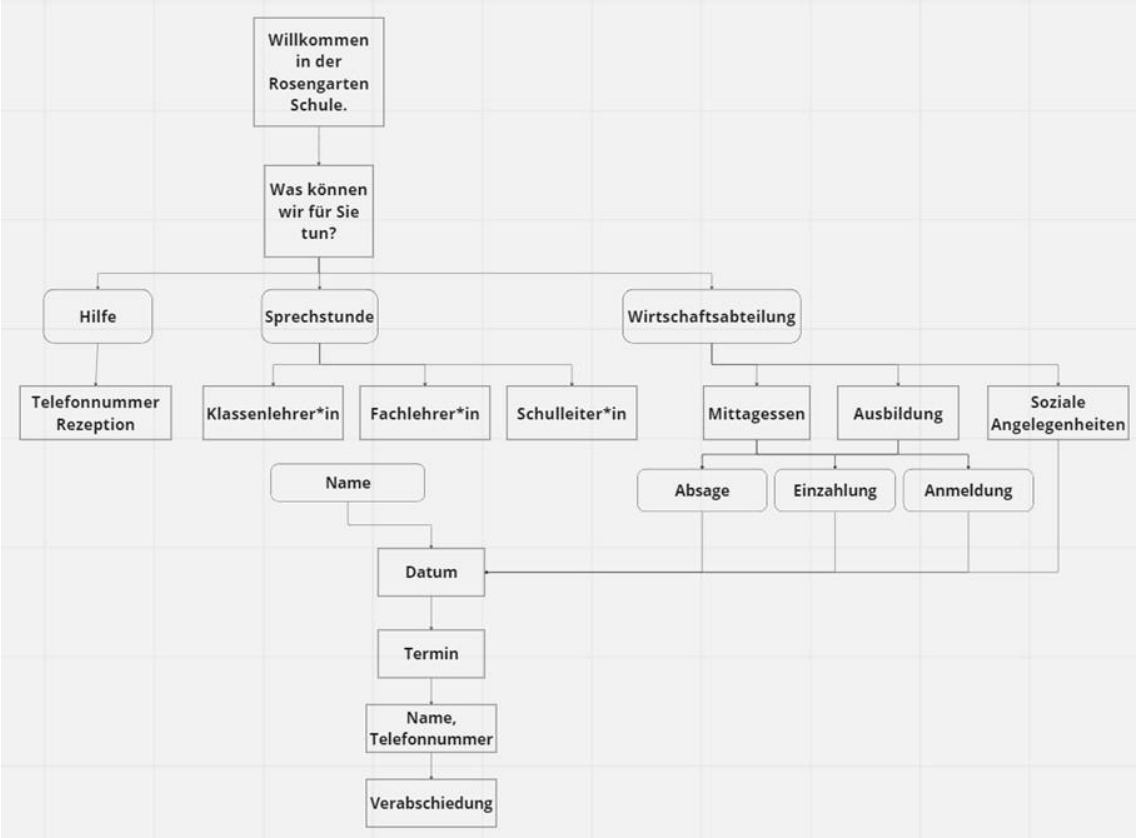
Erstellung eines Ablaufdiagramms

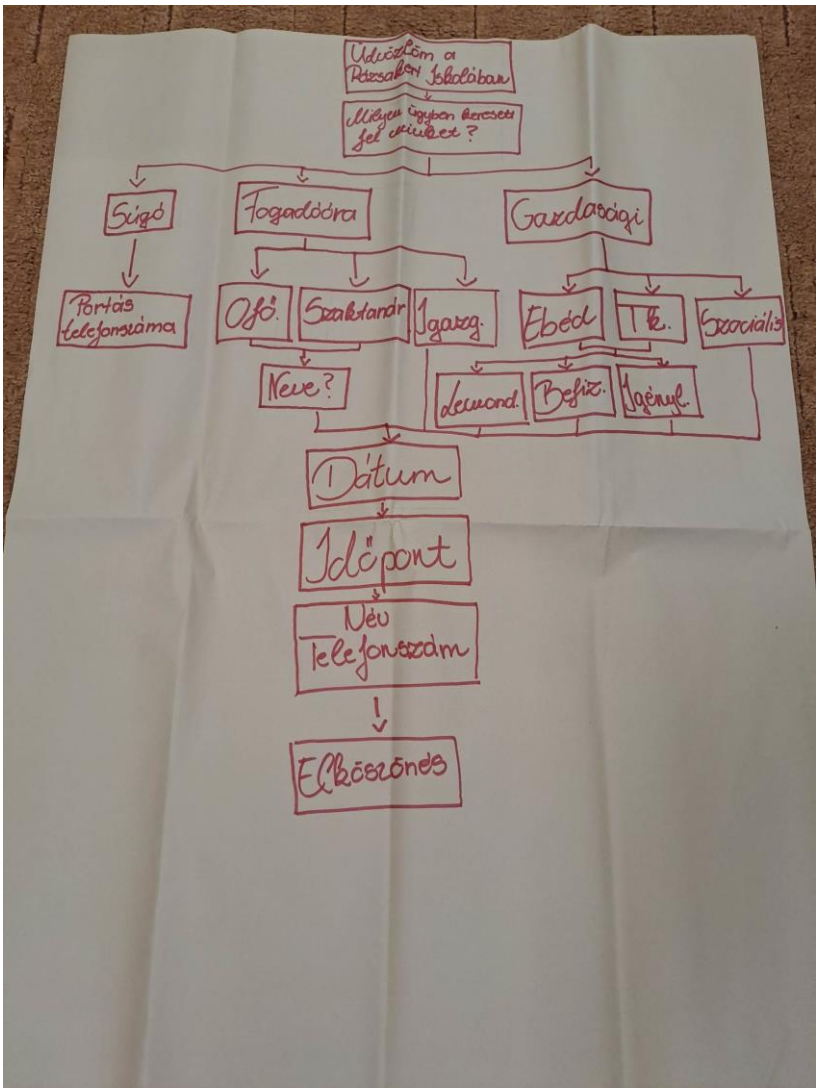
1. Beginnen Sie mit dem Zeichnen des Ablaufdiagramms.
2. Stellen Sie sicher, dass jeder Schritt des Entscheidungsprozesses sinnvoll ist und dass die Benutzer*innen nicht in eine Endlosschleife geraten, aus der sie nicht mehr herauskommen.
3. Vermeiden Sie Sackgassen im Ablaufdiagramm. Die Benutzer*innen sollten schließlich einen Endpunkt erreichen.
4. Gestalten Sie das Ablaufdiagramm so einfach wie möglich, aber geben Sie den Benutzer*innen gleichzeitig genügend sinnvolle Wahlmöglichkeiten.
5. Vergessen Sie nicht, einen Schlusssatz einzufügen, damit die Benutzer*innen nicht in einer Sackgasse landen. Gleichzeitig sollte der Schluss so offen sein, dass die Benutzer*innen wissen, dass sie jederzeit weitere Fragen stellen können (ENARIS, 2023).

Die Student*innen wurden in acht Gruppen eingeteilt, aber hier werden nur zwei Gruppenbeispiele gezeigt. Die beiden Diagramme unten zeigen, wie schwierig die Aufgabe für die Studierenden war, da viele Bedingungen erfüllt werden mussten.

Das erste Diagramm zeigt einen fast perfekten Prozess. Es gibt keine Endlosschleife und der Prozess endet nicht ohne dessen, dass die Student*innen ihre Aufgaben erfüllen können. Diese Gruppe hat die Aufgabe gut verstanden und konnte sie gut lösen.

Abbildung Nr. 6: Lösung der Student*innen Nr. 1

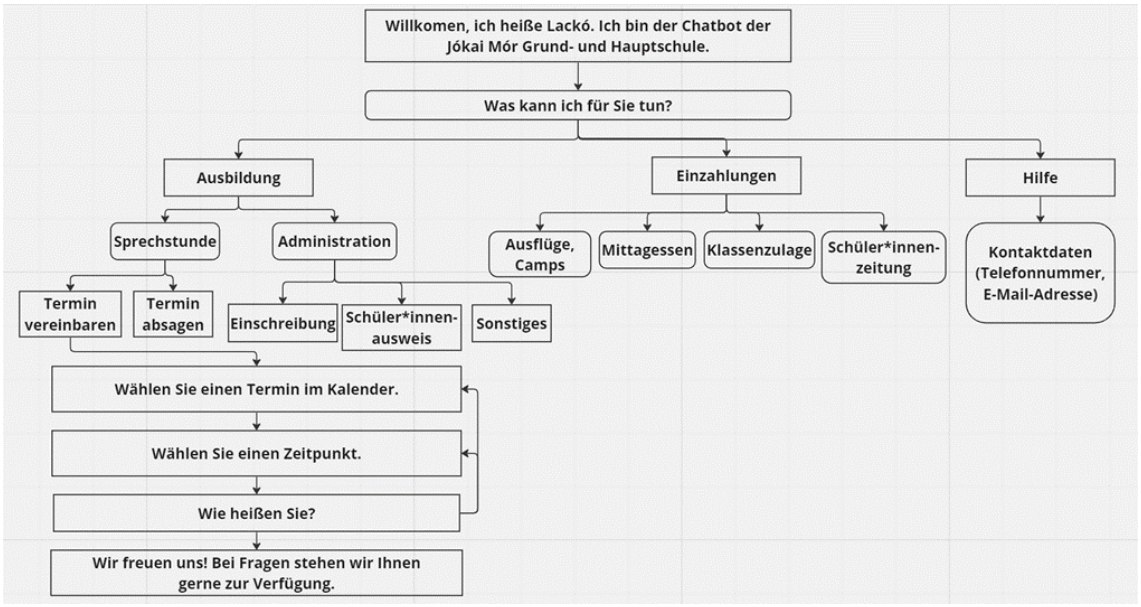


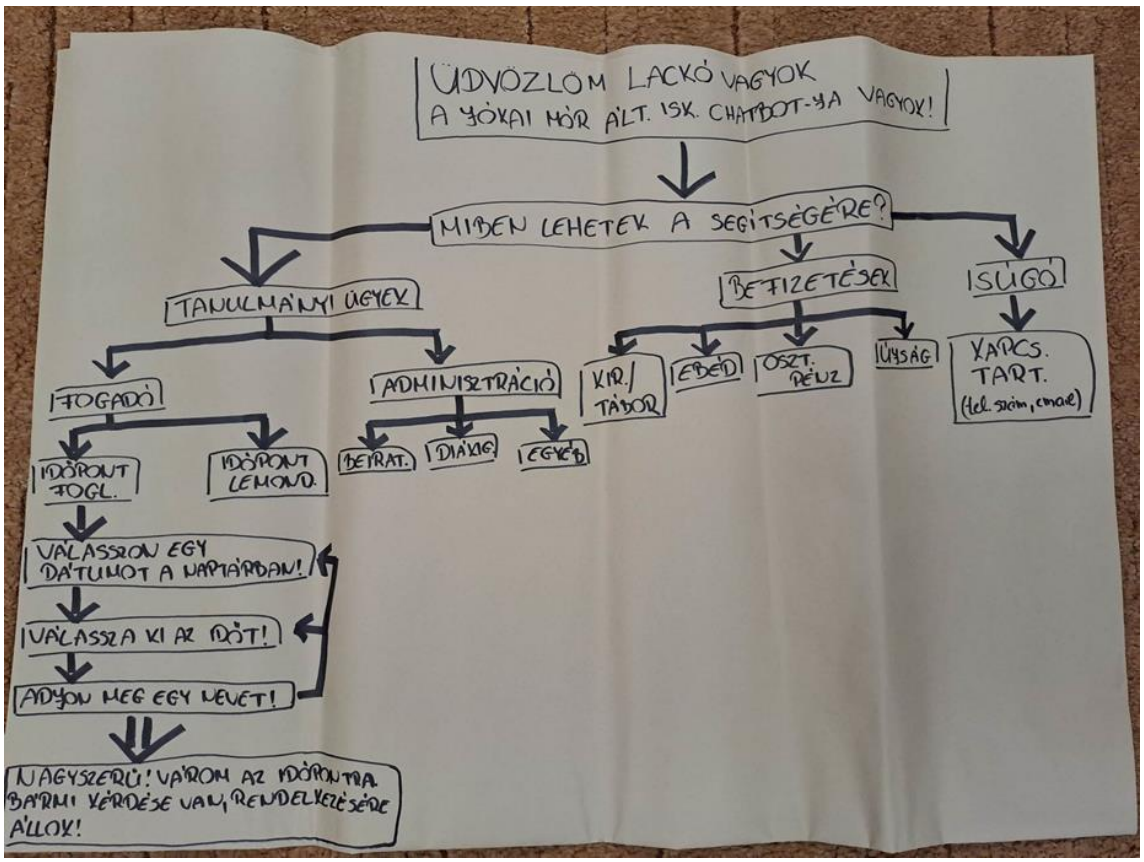


Quelle: eigene Quelle

Auf der Abbildung 7 sehen wir sofort, wie unterschiedlich diese Gruppe, wie die vorige gearbeitet hat. Leider finden wir hier logische Probleme. Nur in einem Zweig wurde der Algorithmus ausgeführt (Ausbildung/Sprechstunde, usw.), an den anderen Stellen - obwohl der Ausgangspunkt noch gut ist - ist das Flussdiagramm nicht abgeschlossen, d.h. es gibt kein Ende des Algorithmus. Der Administrationszweig der Ausbildung und der Einzahlungen hätten mit der Terminbuchung und den nachfolgenden Teilen verknüpft werden müssen. Die Arbeit dieser Gruppe ist daher unvollständig und der Algorithmus ist in einigen Fällen nicht abgeschlossen.

Abbildung Nr. 7: Lösung der Student*innen Nr. 2





Quelle: eigene Quelle

Das NLP-basierte Modell

Die andere Aufgabe bestand darin, ein NLP-Modell zu entwickeln, in dem alle vier Kompetenzbereiche (die sprachlich-linguistische, die logisch-mathematische, die interpersonale und die bildlich-räumliche) gestärkt werden konnten. Bei dieser Aufgabe sammelten die Lernenden in einer Tabelle die Ausdrücke, die der Chatbot erkennen muss, und sie

sammelten auch, wie und welche Antworten der Chatbot auf die Eingaben geben wird, damit das Gespräch reibungslos verläuft. Die Abbildung unten zeigt das Modell von Gruppe 1, die die Flußdiagramm-Aufgabe perfekt gelöst hat. Ein humorvoller Dialog veranschaulicht die Schwierigkeiten, die Menschen oft mit dem Chatbot haben. Wenn man sich nicht sehr klar ausdrückt oder die Frage, bzw. Anweisung nicht das, in den Roboter einprogrammierte Schlüsselwort enthält, kann die Transaktion leicht scheitern.

Es ist auch klar, dass es einfacher ist, einen, auf einem Flussdiagramm basierenden Chatbot-Algorithmus zu erstellen, da nur ein einziger Prozess ausgeführt werden muss. Das Arbeitsprinzip eines NLP-basierten Chatbots ist viel schwieriger, da es nicht immer gleich ist, was die Eingabe erkennt und welche Antwort ihr beigebracht wird.

Tabelle 1: Lösung der Student*innen zum NLP Modell

Input (Benutzer)	**Output (Chatbot)**
Guten Tag, ich bin Erika Kiss.	Willkommen in der Rosengarten Schule. Was können wir für Sie tun?
Ich würde gerne mit Frau Kovács sprechen.	Leider kann ich Ihre Antwort nicht verstehen. Wählen Sie eine der folgenden Optionen: Wirtschaftsabteilung, Sprechstunde, Hilfe.
Ich möchte zur Sprechstunde.	Mit wem möchten Sie einen Termin vereinbaren? Optionen: Klassenlehrer, Fachlehrer, Schulleiter
Ich suche Frau Kovács.	Leider kann ich Ihre Antwort nicht verstehen. Wählen Sie eine der folgenden Optionen: Klassenlehrer, Fachlehrer, Schulleiter.
Sie ist die Klassenlehrerin.	Wie heißt die Klassenlehrerin?
Verstehen Sie nicht, dass ich Frau Kovács suche?!	Termin mit: Frau Kovács. Für welches Datum möchten Sie einen Termin vereinbaren?
Ich möchte übermorgen kommen.	Leider kann ich Ihre Antwort nicht verstehen. Wählen Sie Monat und Tag.
18. März	Datum angenommen. Verfügbare Zeiten: 9.30, 12.30.
Ich kann am Nachmittag kommen, ich koche das Mittagessen.	Leider kann ich Ihre Antwort nicht verstehen. Bitte wählen Sie zwischen den folgenden Zeiten: 9.30, 12.30.
Ich sage ja, 12.30 Uhr ist gut für mich.	Termin gebucht für 12.30 Uhr. Bitte geben Sie Ihren Namen und Ihre Telefonnummer an.
Ich bin Erika und ich kann über das Telefon meines Mannes erreicht werden.	Leider verstehe ich Ihre Antwort nicht. Geben Sie mir eine bestehende Telefonnummer.
0036 70 998 1144	Danke, Ihre Reservierung wird Ihnen per SMS mitgeteilt! Vielen Dank für Ihren Anruf, wir wünschen Ihnen einen schönen Tag.
Auf Wiederhören.	

Quelle: eigene Quelle

Fazit

In unserer experimentellen Forschung haben wir neue Methoden im Kurs Ungarische Sprache II. eingeführt, um die Motivation, die Zusammenarbeit und die multiple Intelligenz der Student*innen zu verbessern. Wir nutzten die Grundlagen der Erstellung von Chatbots, um die Lernenden mit Grammatikregeln vertraut zu machen. Dies half ihnen, ihre sprachlich-linguistischen Fähigkeiten zu entwickeln. Da die Student*innen ihre eigenen Flussdiagramm- und NLP-basierten Chatbots entwickelten, wurden auch ihr algorithmisches Denken (d. h. ihre logisch-mathematische Kompetenz) und ihr räumliches Sehen (bildlich-räumliche Intelligenz) gestärkt. Nicht zuletzt verbesserte die Teamarbeit auch ihre zwischenmenschlichen Fähigkeiten, d.h. ihre interpersonale Kompetenz.

Die Studierenden verstanden, wie komplex Sprache sein kann, und entwickelten gleichzeitig ein Programm, das auf diese Komplexität reagieren kann. Die menschliche Sprache ist sicherlich eine Herausforderung für die künstliche Intelligenz. Es ist noch niemandem gelungen, eine Maschine zu bauen, die einen menschlichen Gesprächspartner völlig authentisch simulieren kann, aber es gibt bereits sehr gute, fast perfekte Programme. Leider aber funktioniert auch zwischen Menschen die Sprachbearbeitung oft nicht perfekt. Ein anderes Modell, das in den Kurs eingebettet werden kann, ist z. B. das Vier-Seiten-Modell von Schulz von Thun, das ein gutes Beispiel dafür ist, wie komplex Sprache für Menschen sein kann und wie sich die Vorstellungen von Sender und Empfänger oft deutlich unterscheiden. Wir sind der Meinung, dass der Kurs Ungarische Sprache II. mit dem Experiment und den neuartigen Methoden sein Ziel erreicht hat, da die Student*innen nicht nur den Unterrichtsstoff erlernt haben. Die Herangehensweise und das methodische Wissen der Lernenden wurde bereichert und durch die neue Methode und die Theorie der multiplen Intelligenz wurde ihre Kooperationsfähigkeiten entwickelt.

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Gyöngyi Csenger

DEVELOPMENT OF ENVIRONMENTAL AND HEALTH-CONSCIOUS BEHAVIOUR IN LOWER PRIMARY ENGLISH LESSONS

Abstract
Health as a value was already respected in the life of the oldest communities, and they tried to create harmony in their lives. The perception of health, the positive attitudes towards health are established in childhood. Families and the educational work carried out in public education institutions, occupy a special place in this process. Health education and promotion, as important elements of education for sustainability, prepare students to respect health as a value and be able to contribute to the creation of a sustainable society and economy in an active and constructive way. The purpose of this study is to present the theoretical background and pedagogical practice of health education by examining the content of national curricula, the Health education programs of primary schools in Győr-Moson-Sopron county, and a survey performed with the headteachers and English teachers of the elementary schools of this county. We assume that these schools have a Health education program, health education is included in the curriculum of all subjects, project work is considered a significant method. Environment and health education can be supported by project work, highlighting sustainability and the importance of environment protection. The novelty of the pilot environmental education project - presented in this paper - is the module focusing on environmental hazards, as this is an extracurricular topic. The pre- and post-survey carried out among the 4th grade learners of a volunteer primary school before and after the project implementation proved that they had some basic knowledge about some areas of sustainability and healthy life but the project could help them to widen and deepen their knowledge and to understand the link between environment and their health.

Keywords: health education; project pedagogy; foreign language teaching

Introduction

"*Sustainability is defined through three interconnected domains or pillars (environment, economic, and social) and it is the process of maintaining change in a balanced environment, in which the resource exploitation and the orientation of technological development are all in harmony and enhance the potential to meet human needs and aspirations*" (Kiss, 2019). According to the World Health Organization, (WHO), the evidence of a link between human health and the environment is mounting and almost a quarter of global deaths result from different environmental factors such as air, water and soil pollution (Vezér, 2012) and climate change (Páldy, 2017). Environmental health encompasses those aspects of human health and disease that are determined by various environmental factors. It includes the direct effects of chemicals, radiation, and certain biological factors as well as the indirect effects of housing conditions, urban development,

land use and transport on health and well-being. The Seventh Ministerial Conference defined the future environment and health priorities and commitments with a focus on climate change, biodiversity loss and environmental pollution (WHO, 2023). In Geneva (2004), the 57th World Health Assembly emphasized in its decision for health promotion, health education, and a healthy lifestyle that unhealthy nutrition, smoking, alcohol consumption, and a sedentary lifestyle are serious challenges. The growing technological and anthropogenic impact on the environment, and the need for sustainable development of human society require the development of education and putting a greater emphasis on environmental issues preparing students to perceive the rapidly changing everyday reality (Aleksandrov et al, 2016). It is also important "*to encourage teachers to plan and implement discipline-based and interdisciplinary education in their teaching practice and contribute to integrate the principles, values, and practices of sustainable development (SD) into all aspects of education*" (Uitto, 2017). The basic task of health education in Hungarian schools is to prepare the rising generations, by developing their health behaviour, within an institutional framework, so that they can take an active and responsible role in the realization of their healthy lifestyle as adults (Meleg, 2002). The goal of health education is to influence the complex lifestyle, because the individual health behavioural risks amplify each other's effects. It is very important to convey knowledge about protecting health, but the information itself does not result in a change in people's attitudes or behaviour. The effectiveness of physical and mental health education requires a process-based, complex, interactive, skill-building activity system (Bazsika, 2011).

According to the Comprehensive School Health Promotion Program, (2015), schools should focus on the following four areas:

- implementation of healthy nutrition (preferably by connecting local production - local consumption);
- daily physical education for all students meeting the health promotion criteria, as well as other /physical exercise opportunities;
- promoting the development of children's mature personality and mental health with person-centred pedagogical methods, as well as the effective use of the arts for personality development and the effective use of community-based health development;
- facilitating the skill-level acquisition of a wide range of health knowledge.

Since physical and mental health education is a priority educational goal, it cannot be linked to just one subject, but all subjects should contribute to the achievement of this goal. That is the reason of creating the project, called Healthy English, which can bring a complex, cross-curricular approach in English language teaching and learning process.

Járomi (2016) examined the implementation of the Comprehensive School Health Promotion Program in 288 primary schools among 3rd, 5th and 7th grade students. The research aimed to detect the health knowledge and attitudes, to explore the movement patterns and the characteristics of health culture. The results show not extremely determining but positive changes in children's health behaviour.

The examination of Health Education Programs was carried out by Hungarian School Health Society at national level, involving the 10 % of the institutions of public education, in 2006. According to the research it can be stated that the schools cannot be characterized by a cross-curricular, interdisciplinary approach. The examined schools do not monitor, check and evaluate the efficiency of the health education program, and it would be essential to establish a team that is responsible for the implementation of the planned health education activities (Kaposvári, 2007).

The Health Behaviour of School-Age Children research has been carried out in cooperation with the World Health Organization. The national report on the 2018 survey of international research examines the health behaviour of adolescent youth. According to the conclusion of this research "*poor eating behaviours, physical inactivity and the rise in adolescent overweight and obesity indicate that insufficient progress has been made in the implementation of policies and actions*" (Inchley et al., 2020).

Measurements in Hungary at national level, or any research results on the health status of the 6-10-year-old age group are not available, which means a serious research gap. Moreover, Czrappán (2022) summarized that the experiences of the last decade show that there is hardly any research-based data, there is hardly any systematic monitoring that would serve as a basis for central decisions regarding Hungarian National Core Curricula. A content analysis of the specific educational goals of the Hungarian National Core Curricula has not been prepared before. These facts underpin the necessity of the content analysis and questionnaire surveys that provide insight concerning the Hungarian educational system. This paper analyses the goals of health education and promotion in Hungary as important parts of sustainability. For this, a review of the main documents concerning children education in Hungary was carried out, and surveys were conducted among educators to generate data concerning the educational conditions and the attitude of the system towards sustainability. Moreover, this paper presents the results of a pilot test for a project of environmental education with children, that is formulated considering the information generated by the previous document analysis and surveys. The environmental education project focuses on sustainability and the link between the environment and health as well as draws the children's attention to the need of any little steps to protect the environment. For this reason, although only at a case study level, the knowledge of the causes and health effects of environmental hazard are revealed and some actions to protect environment and health are also mapped. These data show learners' knowledge about sustainability, their attitudes to environment and their environmental culture and behaviour. The project can contribute to the development of Green Competences that are embodying sustainability values, embracing complexity in sustainability, envisioning sustainable futures and acting for sustainability (Bianchi et al., 2022).

Foreign language teaching and learning in curriculum

The main aim of foreign language teaching and learning is to enable the learners to gain their personal communication goals by collecting, comprehending, sharing information in foreign languages. It is also important to be able to use a foreign language as a tool in personal and professional life as well. An essential part of the pedagogical work is to develop and strengthen the positive feeling that children are able to satisfy their basic communication needs in a foreign language. In primary school, foreign language learning is based on the processes of natural language acquisition. Pupils build on the experiences of acquiring their mother tongue while learning a foreign language.

"Foreign language teaching is activity- and learner-centred, and it creates situations for the learner according to his or her age or interest in which his or her personality develops and uses the language effectively as a tool. For all this, an approach to communicative competence in a broader context is essential, and the joint development of linguistic elements (systems of signs and rules) and sociolinguistic components. An interdisciplinary approach that builds on knowledge gained in other subjects is particularly significant, and knowledge acquired in a foreign language enriches the learning of other subjects. Project tasks, gathering information for the subject, internet research, can all be done in a foreign language, preparing the student for the exchange of information in the world of work" (Government Decree, 2018).

In Hungary, foreign language learning is compulsory from the 4th grade. However, if there is any opportunity or need for foreign language learning, it is worth starting children's language development earlier. It is important to motivate children for the foreign language learning. In lower primary classes foreign language lessons should be experience-based, activity-oriented. Learners should be active participants of the lessons. It is important for the language learner to be involved in the cooperative learning process. The lessons at this pedagogical stage should be characterized by playfulness and varied forms of interactions which can be based on learning songs, rhymes and tales. Storytelling can be combined with movements and dramatization. Cooperative forms of work and project work that encourage collaboration in classrooms develop children's problem- and process-oriented thinking as well as communication in foreign language. Becoming an active, independent language learner is essential for lifelong learning.

According to these general goals, the cross-curricular integration, the holistic approach, and the development of the entire personality of the students and the educational goal from the curriculum can be highlighted because

- education for physical and mental health is included as a priority development area/educational goal in all the National Curricula published since 1995;
- shaping the health-conscious attitude of children, forming and developing their health-conscious behaviour means developing the entire personality of the students and satisfying their "*biogenic, psychogenic and sociogenic needs*" (Kováts-Németh, 2010, p.201);
- education for physical and mental health cannot be linked to one subject, it can be linked to the curriculum of any subject or any extracurricular activities, making

use of the possibilities of connection between subjects and the holistic approach, which presupposes a renewal of the pedagogical culture.

All of this confirms that foreign language classes should also provide the opportunity to develop learners' physical and mental health and a healthy lifestyle.

Methods and materials

The research related to develop children's environmental- and health conscious behaviour it should be have a glance at the national and institutional background, using this paper involves document analysis and, questionnaires and statistical analysis as research tools (Boncz, 2015).

The following hypotheses were formulated for the research:

H1:Primary schools have a Health education program based on situational analysis, and is constantly monitored, evaluated and revised.

H2: Health education can be found in the curriculum of all subjects.

H3: Applying project work is an outstanding method.

H4: Environmentally and health-conscious behaviour is realized in the examined learners' actions.

Document analysis 1 – Content analysis of National Curricula 1995-2020

In Hungary, the National Core Curriculum regulates the content of educational work in public education institutions. Since 1995, the National Curricula have identified physical and mental health education as a priority development goal for schools. As the first step of the content analysis, common elements appearing in each curriculum were selected. After that, the focus was on the examination of different, new elements. (Government Decrees 1995-2020)

Document analysis 2 – Content analysis of Health Education programs

Since 2003, for Hungarian schools it is compulsory for schools to prepare a Health Education program. That was the reason of the analysis carried out in 45 primary schools maintained by the state institution maintenance centres in Győr-Moson-Sopron county. The programs were examined according to given criteria such as:

- whether the given institution has a Health Education program;
- whether it is based on a situation analysis;
- whether any goals, tasks, activities, or methods have been defined;
- whether there are people responsible for coordinating, controlling and evaluating the implementation of the activities.

A questionnaire among headteachers

In addition to the content analyses of the Health Education programs, the headteachers of the above-mentioned schools were interviewed by a written questionnaire of 31 questions. The survey contained mainly closed questions based on the results of the Health Education program analysis and its aim was to reveal the relevance between the plans and reality. The questions concerned some general data of the schools, as well as the goals, tasks, activities and methods used by them in education for sustainability. The survey was filled in by 40 headteachers. This study highlights only two questions concerning the methods used in lessons and the extracurricular activities to reveal the forms of sustainability education and to prove the need of the health education project that was prepared.

A questionnaire among English language teachers of primary schools

As the project focuses on the 4th grade was prepared for English lessons, it was also important to get some information from the English teachers of the examined schools. Only 32 teachers gave answers for the online survey that contained 10 closed questions concerning mainly the methods and tools they use in their lessons and whether they implement any material concerning sustainability or health education and development process.

A survey among language learners – a case study

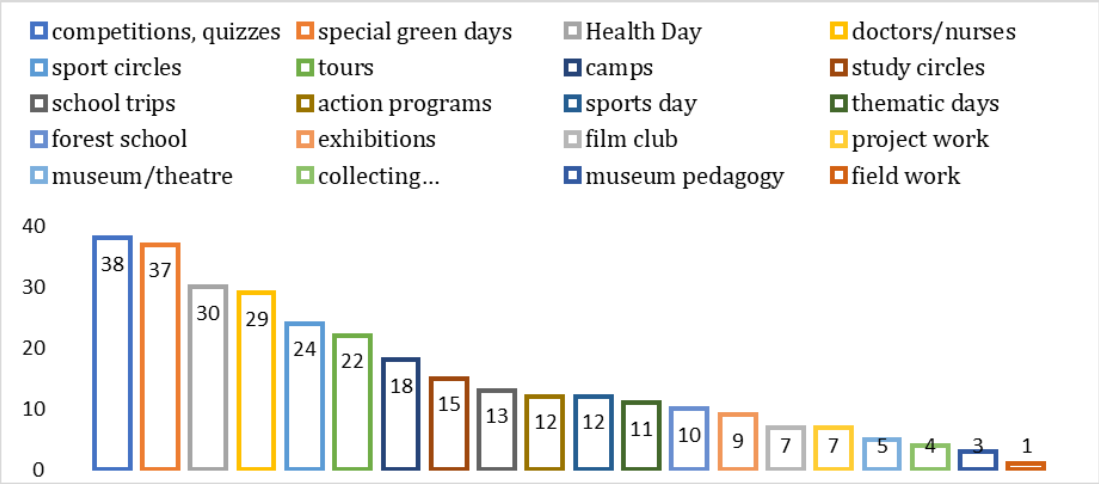
A written questioning of the students was carried out before introducing the project involving 63 fourth-grade students, studying English in one voluntary participating school. The purpose of the survey was to reveal the students' prior knowledge. After presenting the project in 10 lessons, there was another written questioning to check the short-term effect of the project on the children's knowledge, attitudes, behaviour. The questions concerned the causes and health effects of environmental pollution, and activities carried out for environmental protection and health preservation. In the first questionnaire there were open questions. The answers in the first 3 places from the lists were highlighted. In the second questionnaire the Likert scale was used.

Results and discussion

Hungarian National Curricula emphasize that schools have a great responsibility in the field of physical, mental and social development of students and establish the joy of health and the value of harmonious living. Another key concept is the development of positive attitudes, behaviour and habits towards environment and health. The documents include tolerance and assistance for injured and disabled people, as well as preparation for adulthood and responsible relationships. Another common feature is that they highlight the importance of preventing domestic and traffic accidents and diseases, as well as the development of a system of activities aimed at preventing harmful addictions. The project, carried out among the students, emphasizing the importance of environmental protection in order to preserve health, is in line with these goals.

Considering the results of analysing Health education programs, they contain very similar, general issues, there cannot be found any unique goals, tasks, activities, and they are not built on a situation analysis. However, it would be important because it is the only way to carry out the health education activities considering the needs, possibilities and potentials of a given community. In addition, evaluation and feedback are also inevitable for effective and efficient work however, there is a lack of examination of the health education activity system at institutional, county and national level, and they are not built on a situation analysis. The organization of daily physical exercise, movement or any physical activities like folk dance is a legal requirement (according to the Comprehensive School Health Promotion Program) that all institutions comply with. In order to ensure students' mental health protection, schools focus on reducing bullying, and conflicts and offer extracurricular activities after lessons. In the range of extracurricular activities (84.44 %), school competitions and quizzes are at the first place. In the case of 30 schools (66.66 %), the organization of Health Days is an important element of the health education activity system. There are schools (64.44%) that highlighted the presentations/lectures given by the school doctors or nurses. In order to ensure sports and physical exercise, some schools (53.33 %) organize sports circles (53.33%) walking and cycling tours (48.88 %), excursions (28.88 %) and sports days (26.66 %). Only 7 schools (15.55 %) have ever prepared projects related to health education. (Figure 1)

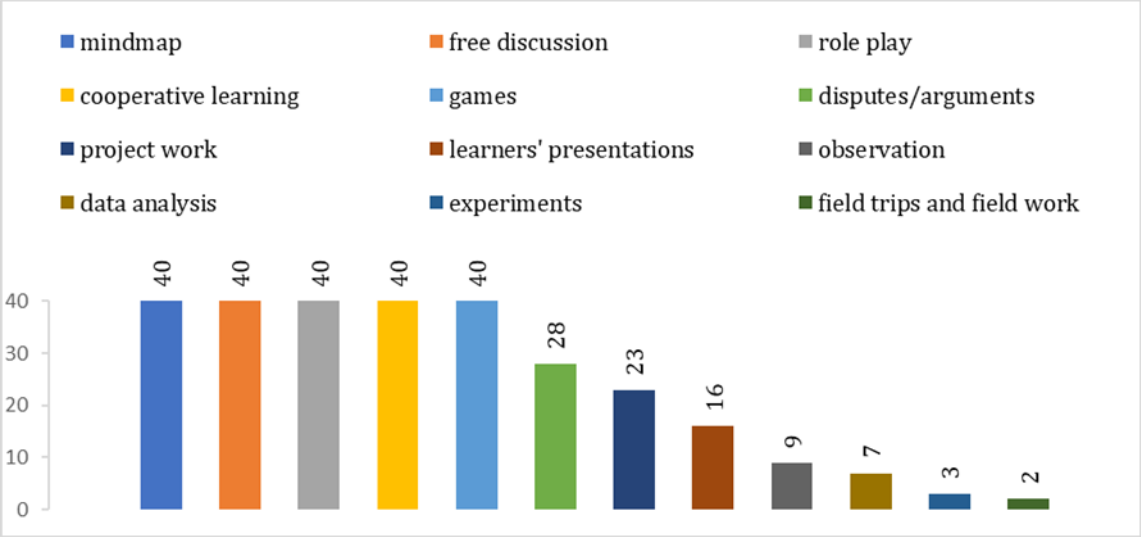
Figure 1: Activities to develop health conscious behaviour



Source: own edition

Analysing the results of the headteachers' questionnaires, it can be stated that games, discussions, mind maps, cooperative learning, and role-plays are parts of everyday pedagogical practice, according to each interviewed headteacher. Project work (57.5 %) and more presentations of students (40 %) could be included in the methodological palette. (Figure 2)

Figure 2: Elements of the pedagogical practice



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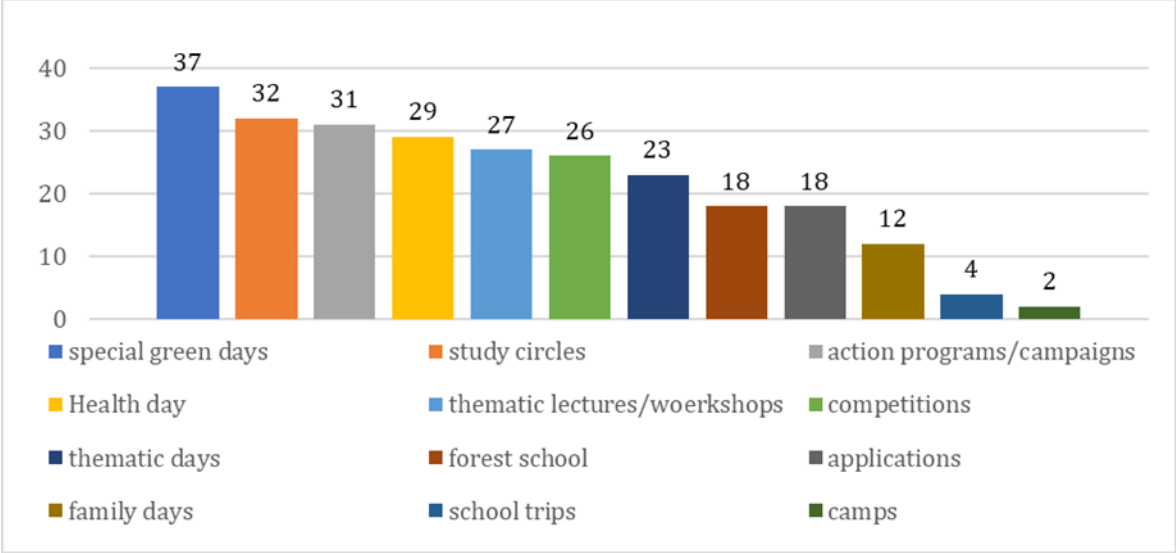
The headteachers' answers - considering the extracurricular activities - show that the celebration of special green days can be easily incorporated into daily practice. On Health Days and thematic days, schools organize contests, sports programs, and excursions, and there are lectures held by school health experts and external speakers. (Figure 3)

Figure 3: Extracurricular activities



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Considering the answers of English teachers, among the methods used by them, explanation, discussions and role plays are at the first three places. Only 9 teachers mentioned projects. They deal with healthy eating, family and relations and daily routine as these are among the topics of 4th grade teaching-learning material, but they do not use any extracurricular material on environment and health because there is no time for it, it is not so important than the general topics, and children even in Hungarian do not have enough knowledge, so it is pointless to deal with it in English lessons. Table 1 presents the results.

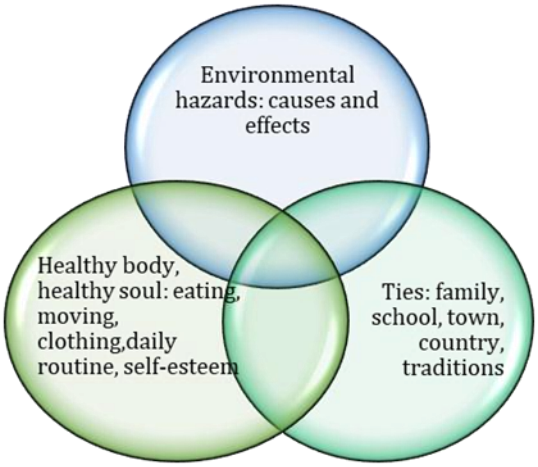
Table 1: English teachers' methods and attitudes towards sustainability

What methods do you use most often?	Do you cover any topics of sustainability in your lessons? If yes which ones?	If you do not deal with sustainability, why not? Give reasons
explanation – 80 %	healthy eating – 80 %	lack of time – 72.50 %
discussion – 80 %	family and relations – 67.50 %	it is less important than any other topics – 45 %
role plays – 42.50 %	daily routine – 67.50 %	it is pointless to deal with this topic because of the low level of English – 42.50 %

Source: own edition

The main aim of the project is to focus on sustainability and the link between the environment and health as well as draw the children's attention to the need of any little steps - made by them - to protect environment. The Healthy English project consists of three modules. (Figure 4.) Two of them contain the topics of the curriculum. The novelty of the project is the module that focuses on environmental hazards because this is an extracurricular topic.

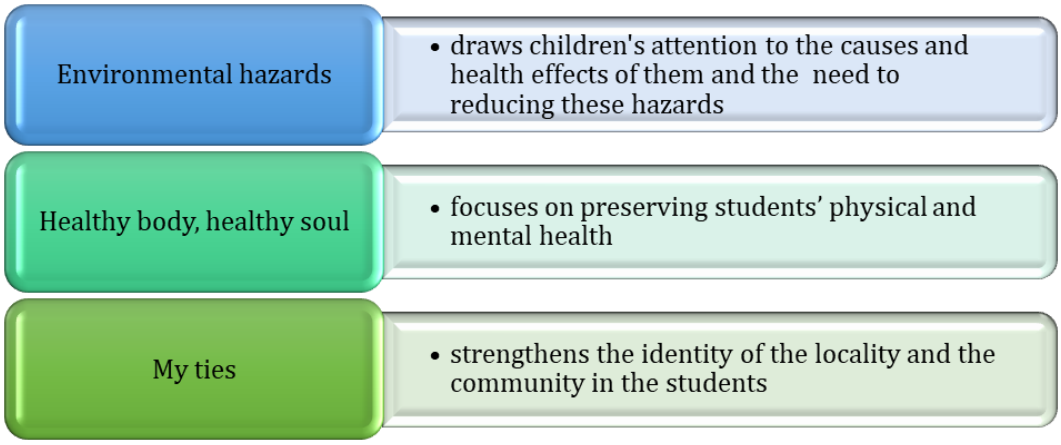
Figure 4: The modules of the project



Source: own edition

Each module has its own goals that is presented in the figure below. (Figure 5)

Figure 5: The main goals of the modules



Source: own edition

The process of the project creation was divided into four phases, which were the preparatory, planning, implementation and feedback stages (Pinter, 2017). In the preparatory phase, the topic, aim and title of the project were defined, and a written questioning was carried out aiming to reveal the students' prior knowledge. During the planning phase, for each module, the environmental challenges to which solutions must be found together with the children during the processing of the module were formulated. For each module, a goal to be achieved, classroom activities helping to achieve the goal, and methods for processing the course material were assigned. The methods based on the activity and co-operation of the children were used so project work and cooperative learning were preferred. Lesson plans were also prepared for processing the teaching – learning material of the module. In the implementation phase, the Environmental hazards module was worked on, applying the previously prepared lesson plans. The frame of the module was given by the story Sharon finds environment. The main character of this tale, Sharon, is looking for the answer to what she can do to protect the environment and preserve her own health. Children help her find the elements of the environment and the possibilities of protecting them in order to live in a healthy environment. "*The content of this story offers a window into the participants understanding of sustainability, reflecting what they find important and doable in their specific situation, and for the teacher, this includes ideas about meaningful learning activities*" (Kall et al, 2024 p. 547). Lessons focused on vocabulary expansion and integrated skill development. The lessons started and finished with a short relaxation or/and a circle time activity. The teaching – learning procedure was supported by videos and interactive materials as well, but children could also draw, colour, cut, and glue – in other words taking active part in learning procedure and learning by doing – while creating the project products.

The feedback phase contained the post-questioning of the children and the evaluation of the project.

In the first question of the pre-questioning survey, the children had to write down the three words that come to their mind in connection with the word "environment". Students

wrote 49 different words. The most popular words were plant/plants, in the second place was the word nature and in the third place was the word animals.

Considering the results of the pre- and post-questioning of children, a small progress can be seen in the children's knowledge and behaviour. Based on the given answers, there are common elements in the questionnaires. It can be seen that there are some changes in the order of the words and new elements also appeared after the lessons of the module. It means that their vocabulary was widened and deepened. Table 2 shows the causes of environmental hazards as well as health damage and diseases caused by these environmental hazards, comparing the results of the children's pre- and post-questionnaires.

Table 2: The results of the children's questionnaire – causes and effects of environmental hazards

Environmental hazards	Causes (1st test)	Causes (2nd test)	Health damage/illness (1st test)	Health damage/illness (2nd test)
air pollution	• **cars** • **factories** • rubbish	• **smoke of factories** • emission • **vans/cars**	• **lung disease** • cough • **lung cancer**	• poisoning • **lung disease/lung cancer** • asthma
water pollution	• **rubbish** • oil • plastic	• **rubbish** • sewage • chemicals	• death • dermatologic problems • **infection**	• **infection** • epidemic • diarrhea
soil pollution	• chemicals • rubbish • oil	• plastic bottles • plastic foil • household waste	• poisoning • unhealthy plants • **food shortage**	• drinking water pollution • **poisoning** • food poisoning
stress	• **tests** • work • lack of time/**deadlines**	• **keeping deadlines** • **school tests** • continuous noise	• **depression** • **nervousness** • insomnia	• irritability/ **nervousness** • **depression** • anxiety, fear
virtual hazards	• **computer** • **hacker** • **telephone**	• social media • reality shows • **mobiles**	• **addiction** • eye damage • sleeping disorders	• **addiction** • detachment from reality • **eye damage**

Source: own edition

Among the activities of protecting environment, in the 1st questionnaire, children mentioned that they don't litter, they collect the waste in a selective way and save the environment. In order to preserve their health, they move or do sports, sleep enough and

eat fruit and vegetables. These things are taught for them in the lessons of Environmental studies, and everybody can hear about these typical activities. This means that children pay attention to the basic rules and expectations.

In the 2nd questionnaire a list of activities was offered for children and in a 1-5 Likert scale, they had to decide how important they feel the given activities. The list of statements contained the results of the 1st questionnaire and some elements of the module. According to the answers it can be seen that the privilege of waste management was not broken but some other elements of environment appeared, for example water, electricity and air. These areas were mentioned in the module. The evaluation average of the statements is between 4.86 and 4.37 (standard deviation 1.14 and 0.43) and there is only a difference of 0.49 between the average values, which means that their attention was successfully focused on a wider range of activities. Figure 6 shows the results of the 2nd questionnaires concerning the activities to protect environment.

Figure 6: Activities to protect environment

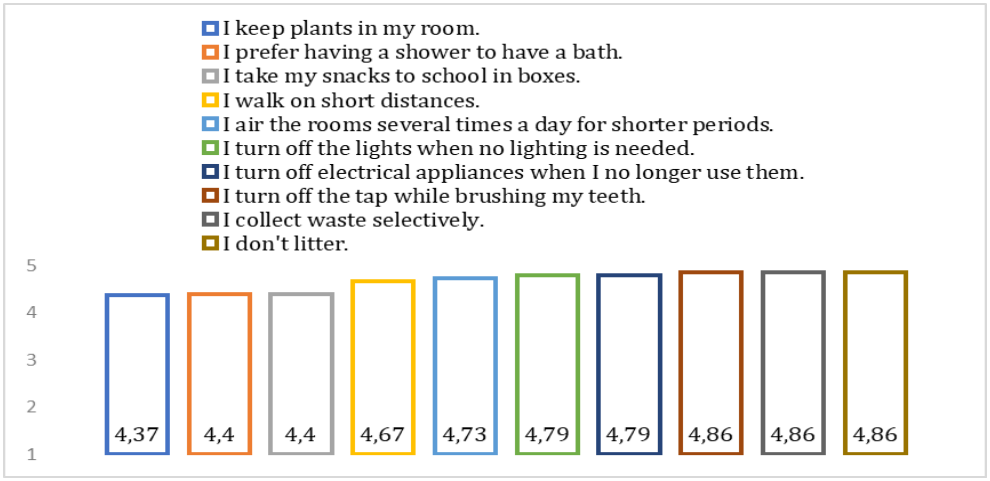


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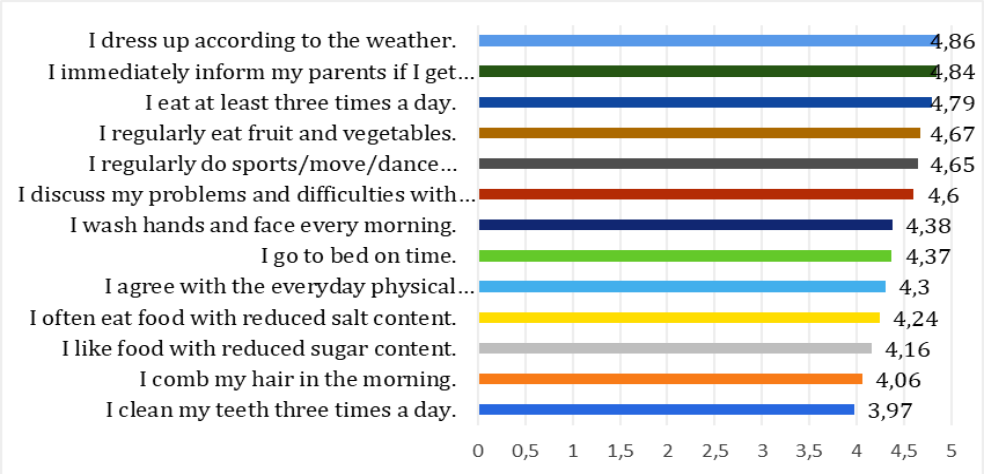
Figure 7 introduces the results of the 2nd questionnaires concerning the activities to protect health.

Figure 7: Activities to protect health



Source: own edition

Analysing the activities that protect children's health, fruit and vegetable consumption, moving, sports and sufficient sleep retained their importance for a healthy lifestyle. The most important for them is wearing clothes according to weather that is a new element. On the second place, cyberbullying can be found. All this coincides with the fact that children consider fear and anxiety due to bullying to be the most significant of the health effects of the virtual environment (4.34; standard deviation 1.16). Social media is considered the most dangerous in the virtual world (4.34; standard deviation: 1.11). The statement in the 6th place can be linked to this topic, based on which, children discuss their problems and difficulties with their parents (4.60; standard deviation 0.83). If students trust their parents and can turn to them with confidence, they can also get help in overcoming the causes (deadlines, school assignments) and consequences (irritation, depression, anxiety, fear) of stress. In addition to these, children also take care of everyday hygiene and dressing. More diverse answers were given regarding the causes and consequences of environmental pollution and also in the field of environmental protection and health protection. The order of the previously named causes and consequences has changed the range of activities has expanded. The project demonstrates - even though at a case study level - that it is worth to enrich the teaching learning material of any subject with elements on sustainability to draw the learners' attention on environmental hazards and global problems.

Evaluating the project, it can be stated that the learners' cognitive and emotional skills, communicative competences have developed, they were motivated and the willingness to participate in the lesson was increasing lesson by lesson. Beside the positive impact some difficulties also encountered. There were children who was not really familiar with group work or they were not satisfied with the groupmates. Children who did not work in cooperative groups, had difficulties accepting that the teacher is not a direct controller but rather a facilitator, a supporter. The other problematic point was that some children preferred using Hungarian instead of the target language.

Examining the hypotheses, it can be stated that one was partially proved, two were not proved and one was proved.

H1: Primary schools have a Health education program based on situational analysis, and is constantly monitored, evaluated and revised.
This hypothesis was partially proved because the examined schools have Health education program but they are too general and are not systematically checked.

H2: Health education can be found in the curriculum of all subjects.
This hypothesis was not proved because it was not mentioned in the examined documents and in the curriculum of English health education is not built in.

H3: Applying project work is an outstanding method.
This hypothesis was not proved because it was mentioned by less than 60 percent of the schools and in English lessons this method was not mentioned among the first three most popular methods.

H4: Environmentally and health-conscious behaviour is realized in the examined students' actions.

This hypothesis was proved because after the implementation of the project the children's responses reflected that environmental and health awareness appears in many more aspects of their everyday activities understanding that each little step counts.

Conclusions

The main aim of this paper was to present the current situation of health education as a part of sustainability education in Hungary with the help of a case study. The results of the research prove that there is a great need to emphasize the role of sustainability education however some efforts are being made to develop students' environmental awareness and their positive attitudes towards environment. According to the results of document analysis and questionnaires, it can be concluded, that the institutional documents mention a wider range of activities concerning sustainability education and health developing processes than in the everyday pedagogical practice is realized. The institutions do not check or evaluate the implementation of health education activities. Moreover, there is a lack of examination of the health education activity system not only at institutional but at county and national level as well. Considering the methodological richness, among the methods used by the teachers, project work, is neglected. The cross-curricular approach and topics of sustainability do not appear in the everyday pedagogical practice, which was proved by the asked teachers. The implementation of the project has shown that to achieve the goals of sustainability education it is important to transfer knowledge by using learner-centred methods, like projects. As the results of the project, children's knowledge about environmental hazards has increased, their attitudes to their environment have changed, and all this is realized in their actions. Project work increased children's self-esteem, confidence, independence as well as their social and cooperative skills and group cohesiveness. The project can serve as a model, but it must be further developed and made accessible to different age groups. It should also be used in university education and teacher training to value sustainability and promote nature.

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András Béres – Ágnes Bálint

ESCAPE ROOMS IN GEOGRAPHY EDUCATION: AN INNOVATIVE APPROACH TO LEARNING AND TEACHING

Abstract

Background: The use of escape rooms in education has gained traction as an innovative pedagogical approach to enhancing student engagement and alleviating learning-related anxiety. This study explored the effectiveness of escape rooms as an instructional tool in geography education, with a particular focus on Generation Z students, who are known for their preference for practical learning opportunities and active engagement.

Results: The study conducted an educational experiment involving Hungarian 7th-grade students, comparing the escape room methodology with traditional frontal teaching methods. The results indicated that students exposed to escape rooms exhibited heightened engagement and sustained attention compared to those in the control group. Furthermore, students generally preferred collaborative escape room sessions, which provided opportunities for social interaction and shared responsibilities. Analysis of end-of-unit test results revealed a positive correlation between escape room methodology and student performance, particularly in tasks requiring higher cognitive levels and evaluation.

Conclusions: The findings suggest that escape rooms align well with the learning preferences of Generation Z students, and contribute to enhanced student engagement, attention, and learning outcomes in geography education. Escape rooms offer a gamified approach that resonates with the characteristics and preferences of modern learners, emphasizing the importance of innovative teaching strategies tailored to contemporary student needs. These insights underscore the potential of escape rooms as an effective instructional tool for fostering meaningful learning experiences.

Keywords: escape rooms, gamification, geography education

Intoduction

In recent years, there has been growing acknowledgment within the educational realm of the efficacy of incorporating games as a pedagogical approach. This paradigm shift has empowered students by providing them with skill-building activities that traditional teaching methods often fail to deliver (Avargil et al., 2021; Peleg et al., 2019; Vidergor, 2021). This study focused on the utilization of escape rooms (ERs) as an innovative educational method. According to Nicholson (2015), ERs are live-action team-based games, in which participants uncover clues, solve puzzles, and complete tasks in one or more rooms to achieve a specific goal, typically escaping from the room within a limited timeframe. ERs are typically dynamic group learning experiences accommodating 2 to 10 participants, though they can also be tailored for individual learners. By combining coop-

eration, collaboration, and hands-on problem-solving, they offer a unique educational opportunity (Arany-Nagy & Jurkinya Mihályné, 2022). ERs in education serve as a method of gamification aimed at motivating students and alleviating the anxiety associated with the learning process (Béres, 2023; Fuentes-Cabrera et al., 2020; Fürjes-Szekeres, 2021). ERs are also an excellent way for learners to grasp the importance of approaching problems from various perspectives. They also provide opportunities for learners to engage in teamwork, build social connections, and foster a sense of fellowship (Panagiotis & Theodoros, 2019; Taraldsen et al., 2022). Additionally, they encourage persistence and engagement while promoting deep learning through group discussions (Hanus & Fox, 2015).

Gamification, particularly teaching through ERs, is methodologically defined by Makádi (2022, p. 42) as "*a teaching-learning strategy in which learners engage in processing curriculum tied to the learning environment, embedded in a story. During interactions and related activities, learners compete with others and face various challenges derived from content or situations. Gamification provides a playful experience enhanced by external elements (scoring system, leaderboard, badges, etc.), differentiating it from didactic games*". Kapp et al. (2013) categorize gamification into content gamification (transforming curriculum to create a game-like experience) and structural gamification (applying game elements to content processing without altering the curriculum, primarily focusing on motivation and engagement through rewards). The authors emphasized that both types of learning could coexist in the same learning process, with their combined application having a more significant impact. The system employed in this study involved structural and content gamification.

The relevance of discussing gamification and ERs in the teaching-learning process arises from the novel and innovative opportunities offered by these tools and methods to enhance the educational experience. Students in primary and secondary education belong to Generation Z, characterized by being born between approximately 1995-1997 and 2010-2012 (Cilliers, 2017; Dolot, 2018; Seemiller & Grace, 2017). This generation has grown in the online world, gaining early and instinctive familiarity with digital tools and online presence, as well as advantages and disadvantages. A defining feature of Generation Z is their ease of access to desired information with only a few clicks.

Seemiller & Grace (2017) argued that the expectations and perceptions of Gen-Z members regarding learning have transformed. However, learning for Generation Z differs significantly from that of previous generations. Northeastern University's innovation survey highlights that Gen-Z students tend to prefer practical learning opportunities that enable them to immediately apply acquired knowledge in real-life situations. One Gen-Z student, as presented in the study, described the ideal learning environment as one where they *"must actively engage to acquire the majority of information"* (Seemiller & Grace, 2017, p. 22). Gen-Z individuals exhibit intolerance toward formal and structured learning, preferring informal and "just-in-time" learning (Carstens & Beck, 2005; Karl, 2007). Under these conditions, gamification and its tools can meet these preferences, making their examination crucial for the design of future schools.

Geography as a school subject

According to Lathwesen & Belova (2021), international studies on interdisciplinary scenarios spanning multiple domains and games rooted in the field of environmental science are absent. In general, there is a discernible deficit of interdisciplinary approaches. Therefore, the geography curriculum in Hungarian public education has the potential to be particularly beneficial to STEM (Science, technology, engineering, and mathematics) research. In the Hungarian education system, geography is fundamentally classified as a natural science subject, yet it possesses several characteristics associated with social sciences. The discipline addresses natural and social geographical issues and knowledge by utilizing methods from natural sciences. Due to the interdisciplinary nature of geography as a school subject, integrating the ER method into teaching methodology is particularly suitable. According to Michael Palin (2011), the former president of the Royal Geographical Society, "*Geography is a living, breathing subject, constantly adapting itself to change. It is dynamic and relevant. For me, geography is a great adventure with purpose*". Geography is unique to all school subjects in its scope for interdisciplinary connections. Geography stands out among school subjects due to its extensive interdisciplinary foundation.

Geography draws extensively from the knowledge and methods of economics, engineering sciences, mathematics, history, sociology, biology, and other disciplines. Consequently, with its diverse foundation, geography can be particularly suitable for developing a wide range of competencies and skills through appropriate techniques and teaching practices (Béres, 2023).

Nevertheless, the popularity of geography remains less than robust among students. Pirkhoffer noted the following: "*From the perspective of students, it is a 'less liked' class. According to surveys that depict the popularity ranking of natural sciences (e.g., Chrappán (2017)), geography is found in the lower half of the ranking, with elementary natural sciences ranking higher. Therefore, as the years progress, something seems to go wrong*" (Pirkhoffer, 2020, p. 109). One reason for this could be the methodological toolkit applied.

According to previous surveys (Bús, 2015; Farsang, 2011, 2014; Schlachter & Teperics, 2022; Ütőné Visi, 2005, 2011), more practical student-centered lessons are infrequently encountered in Hungary. Farsang argues that one of the main reasons for this is that practicing geography teachers suffer from tension caused by the abundance of curriculum content conflicting with limited time frames. Consequently, when various teaching methods are applied, less motivating but less time-consuming frontal methods are used most frequently. The application of more motivating, effective, and time-consuming methods capable of developing skills beyond pure knowledge acquisition is extremely limited (Farsang, 2011, 2014). The number of teaching hours (two per week) allocated to natural science subjects has further decreased in recent years compared with the previous national core curriculum, although their requirements have not fundamentally changed (Farsang & Ütőné Visi, 2020). However, STEM subjects not only provide essential knowledge about how the world functions but also foster critical skills. In addition, they will contribute to future technological advancements and support environmental awareness. The knowledge and skills acquired in these subjects will be important not only

in the labor market but also in stimulating interest in scientific research and discovery, thereby enhancing competitiveness in the job market.

Research Goal

Our objective is to evaluate the effectiveness of ERs as an instructional tool for imparting new knowledge through an educational experiment, focusing on a sample of Hungarian students with average academic performance. In addition to didactic and methodological analyses, we present the established framework and gamified approach to teaching the designated topic based on our thematic plan. We also highlight the observations made within the concurrently conducted parallel control group. The thematic content revolves around Hungary's population, settlement, and economic geography, encompassing a broader perspective. Finally, our goal is to provide a functional framework and an example of ER utilization.

We formulated the following three research questions:

1) Is it possible for students to maintain longer periods of attention during ER learning?

   This study investigates whether the engaging and interactive nature of ERs can extend students' attention spans compared to conventional instructional approaches. We hypothesize that ER learning enhances students' attention spans.

2) Do students prefer collaborative or individual work in the context of ER?

   This research examines whether students prefer collaborative work over individual tasks within ER activities. We hypothesize that the inherent social interaction and cooperative problem-solving in ERs lead students to favor collaborative learning.

3) Does ER align with Gen-Z's learning preferences?

   This study explores whether ER methodologies are compatible with the learning preferences of Gen-Z students. We hypothesize that ERs, with their interactive, practical, and engaging nature, align well with Gen-Z's preference for active and experiential learning, thereby enhancing their overall educational experience.

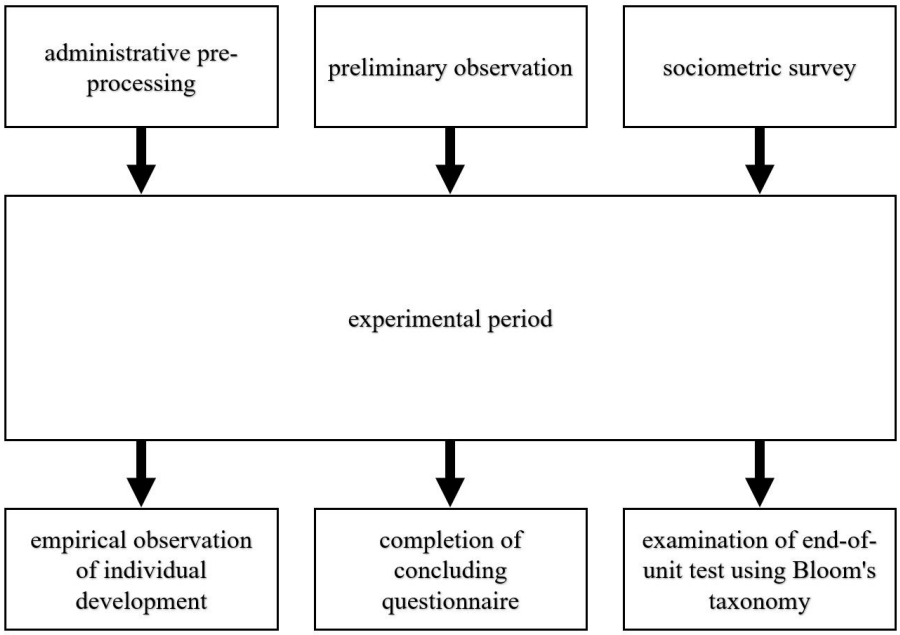
Methods

The procedure of the research

An educational experiment was conducted during the study period (N=46). An educational experiment is an investigation in which the researcher systematically intervenes in the learning and teaching process across multiple variables. Simultaneously, it examines the impact of the intervention on other factors while uncovering and describing the correlations that occur during personality development (Falus, 1993, cited in Csíkos, 2012; Taber, 2019).

This study comprised three distinct phases. Initially, a sociometric examination was conducted to determine how to optimize classroom group work. Subsequently, the experimental period began. Finally, the students demonstrated their knowledge through an end-of-topic test organized according to Bloom's taxonomy, and they completed a concluding questionnaire. The survey comprised seven sections, with the initial part involving students ranking class sessions based on their preferences. Afterward, the participants assessed the classes using a 5-point Likert scale. In the experimental group, questions centered on escape rooms and evaluating preferences and emotions, while the control group addressed a comparable approach but focused on the frontal methodology. The final section involved students providing feedback on learning preferences, including an evaluation by the educator and a closed free-text section.

Figure 1: Flow diagram of the research plan



Source: own source

Research participants

The participants were Hungarian 7th-grade primary school students. The birth years of students fall within the range of 2009 to 2011, corresponding to their school grade according to the educational system, and all students encountered the curriculum of their respective grade level for the first time.

The experiment involved two seventh-grade classes: a 24-student class (experimental group) and a 22-student class (control group). Both classes were taught on the same topic, with the experimental group using the ER method and the control group employing traditional frontal classroom teaching. The experimental group consisted of 24 participants who were evenly divided into 12 boys and 12 girls. The control group included 22 individuals, 10 boys and 12 girls. In both groups, most participants were urban children.

Study plan

This study was conducted simultaneously in two classes. In both classes, the first seven lessons were dedicated to creating and processing new knowledge, followed by the eighth lesson, which aimed to deepen, review, and reflect on the acquired knowledge. Finally, the ninth lesson served as an assessment and evaluation of the learned material (writing the end-of-unit test). The subject matter covered the geography of Hungary, structured according to the principles of the National Core Curriculum (NAT) and the framework curriculum. The topics were presented consecutively in lessons covering Hungary's population, settlement geography, infrastructure, and primary and secondary sectors of its economy.

As previously mentioned, in the control group, topics were exclusively covered using frontal teaching methods. The organization of these lessons is presented in Table 1.

Table 1: The details of the thematic plan of the control group

Lesson number	Lesson Title	Teaching Method	Utilized Tools
1	Hungarian Population Geography	Frontal Teaching	projector
2	Hungarian Settlement Geography	Frontal Teaching	projector
3	Geography of Budapest	Frontal Teaching	projector
4	Hungarian Infrastructure	Frontal Teaching	projector
5	Hungarian Agriculture	Frontal Teaching	projector
6	Hungarian Energy Industry	Frontal Teaching	projector
7	Hungarian Industry	Frontal Teaching	projector
8	Summary Lesson	Frontal Teaching	projector
9	Closing Lesson	End-of-unit test	-

Source: own source

As shown in Table 1, the pedagogical methodology was exceedingly straightforward, requiring only academic preparation for lessons. The employed methods included teacher narration, illustration, explanation, and lecturing, with the students' only required engagement involving work related to guiding and interpretative questions. A board outline was prepared and presented for each lesson, complemented by teacher dictation, to formulate the final lesson notes in the students' notebooks. Every described concept, process, or knowledge content was explained or presented before the discussion or lecture.

Table 2 presents a simplified thematic plan for the experimental class. The teaching methods applied during the lessons were fundamentally different due to the different ER methodologies.

Table 2: The details of the thematic plan of the experimental group

Lesson number	Lesson Title	Teaching Method	Utilized Tools
1	Hungarian Population Geography	Collaborative Work (Offline)	Worksheet
2	Hungarian Settlement Geography	Pair Work (Digital)	Tablet
3	Geography of Budapest	Collaborative Work (Hybrid)	Worksheet, Tablet
4	Hungarian Infrastructure	Collaborative Work (Digital)	Tablet
5	Hungarian Agriculture	Individual Work (Digital)	Tablet
6	Hungarian Energy Industry	Collaborative Work (Offline)	Worksheet
7	Hungarian Industry	Individual Work (Digital)	Tablet
8	Summary Lesson	Frontal Group Work	Projector
9	Closing Lesson	End-of-unit test	-

Source: own source

Escape room methodology

The concept of escape rooms in education aligns with Nicholson's (2015) definition of ER, which aims to achieve a state of liberation through the solution of puzzles and subtasks that are merely symbolic in an average classroom situation. The experience of an escape room fosters a playful mindset. This is accompanied by a multitude of factors, inducing positive emotions and shifting one's state of consciousness through flow, thereby increasing receptiveness, openness, and creativity. Furthermore, it can expand attention span, enhance cognitive capacity, and improve learning readiness, serving as a powerful modulator of the learning process (Bálint, 2022).

During the creation of the escape room, the educator employs content gamification, as advocated by Kapp et al. (2013), and introduces structural gamification by framing the lessons within a structured framework. Through content gamification, a sense of flow is cultivated during the in-class learning process, attributable to the game-like situation (Csíkszentmihályi, 1990). The purpose of the puzzles and subtasks was to facilitate the understanding and practical experience of the subject matter through situational tasks. The state of liberation essentially corresponds to the completion of all tasks, accompanied by incidental processing of the subject matter. From this point onward, the situation transitions into structural gamification, as it is advisable to reward this "escape". For this purpose, it is recommended to design a gamified system, such as collecting badges or symbols that can be exchanged for grades or other incentives. In this study, a reward framework is organized using a stamp collection system.

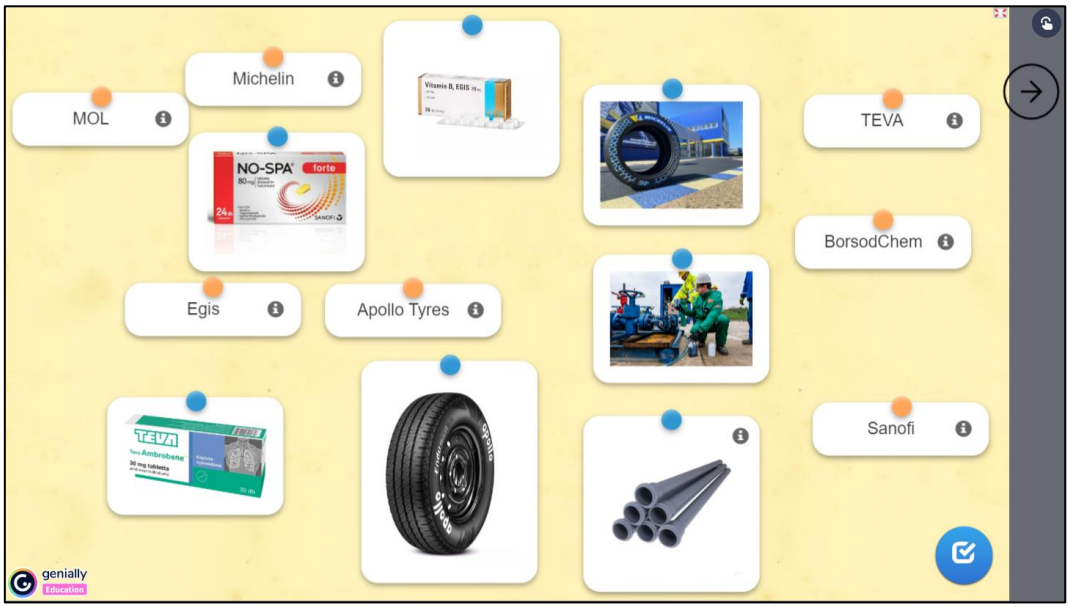
As indicated in Table 2, the ER sessions were conducted in three formats from a technical implementation perspective: digital, hybrid, and offline.

During digital-type lessons, students worked with school tablets. It is important to mention that with the assistance of the school system administrator, we restricted the range of usable applications on each device, allowing only the Google search application and browser to be used as aids.

Digital ERs were designed and executed using the Genially Website (Genially Web S.L., 2023). The platform allows for the creation of interactive ERs, and external content can be embedded. In most cases, we used LearningApps modules. Within Genially's pages, navigation is facilitated by arrows. However, participants obtained a code by solving each embedded task (e.g., 000 or 1111), which the website prompted them to enter upon clicking the arrow. This mechanism requires completion of the task before allowing progression to the next one. The tasks were diverse and included activities such as matching pairs, grouping, arranging events in chronological order along a timeline, short answers, matching data to images, completing missing texts, and solving crosswords. Each task was designed to teach a piece of the lesson and serve its educational and didactic goals. The worksheets aimed to develop the students' competencies in an interdisciplinary manner.

Figure 2 displays a sample task (at the remember level, based on Bloom's taxonomy) in which students had to match some national or significant international companies with the images of their products in a trial-and-error fashion. (In the control group, we projected these images and discussed them using frontal questioning techniques, followed by the creation of a table to organize what they learned). The images were zoomable, but in some cases, they were not clear enough, and later, some corrections to the answers were necessary. Some students took advantage of the trial-and-error approach. When students completed the final task, they were greeted with a closing screen, and could then claim the end-of-lesson reward.

Figure 2: National and international chemical industry companies and a characteristic product



Source: own source

A hybrid ER methodology was also integrated into thematic planning. The geography of Budapest is examined in this context. First, tasks primarily resembling those found in offline ERs were prepared; then, tasks requiring the application of ICT tools were also included. Digital and auxiliary materials were used in certain tasks. During the lesson, a narrative frame was implemented. At the beginning of the class, an AI-generated video was played, featuring a character who presented himself as Taylor Swift's assistant. Students were asked to guide the characters around Budapest based on Taylor's preferences. Throughout the class, a 40-minute Taylor Swift mix was played. Students particularly identified with the frame narrative and worked completely immersed in the flow (Lien et al., 2019; Vörös & Sárközi, 2017).

In the offline sessions, the work was conducted with the assistance of a comprehensive task sheet. We designed the content of the task sheets to compel students to complete the activities within the framework of microgroup collaborative work. While solving the task sheets, students had to obtain a numerical sequence as a result.

In the case of the offline and hybrid ERs, given that the evaluation was not automated but paper-based, it was challenging for us to determine the appropriate assessment method. Ultimately, we adhered to the original solution, placing correct solutions on a desk in various variations and multiple copies alongside similar but incorrect numerical codes. When generating incorrect numeric codes, we anticipated potential methodological errors by preconceiving possible responses and their underlying reasons. This approach was chosen to align with the class objective, which focused on enhancing students' understanding of the lesson material and developing relevant skills.

Each card, as presented in Figure 3, had a "WIN!" or "NOT A WIN THIS TIME ☹" inscription on the back. If the microgroup decoded the correct number combination, they could flip one of the colored cards placed above them. A puzzle was written on it, allowing students to find the corresponding key according to the color in the classroom. After obtaining the key, the groups had to try all the locks on the four boxes provided, and the boxes that were opened contained the prizes (stamps) for the winners. The lockable boxes served as elements within the ER, symbolizing a physically visible objective.

Figure 3: The final steps in the offline and hybrid ERs: Cards, boxes, and stamps

Source: own source

According to the aspects discussed at the beginning of the chapter, in the experimental class, we offered the opportunity to acquire stamps in every lesson, introducing them as one of the components of structured gamification. The stamps depicted various geographical patterns, such as the sun, a rocket, or a smiling symbol, representing the geography of happiness. If students individually collected four stamps, they could earn a grade five as a reward for their lesson work.

We have made the process of collecting stamps progressively more challenging. The reason for this change was to maintain in-class motivation. On the first occasion, each member of each group could receive a stamp. If a microgroup flipped a card with the correct number sequence for the first time, the entire team could obtain a stamp. However, with each subsequent flip, an individual dropped out of the stamp collection opportunity if their microgroup revealed a card with the wrong combination. In such cases, students discussed and weighted the tasks within the group depending on the number of attempts. Despite the initial incorrect solution, each group member could still receive a stamp. This rewarding procedure helped to sustain the motivation for finding a solution within the group, even if the first attempt resulted in an incorrect solution due to the maintained incentive through grade motivation.

The approach aimed to implement the principle of individual and collective responsibility in cooperative learning (Kagan, M., & Kagan, S, 2009; Arató & Varga, 2008). Collaborative and paired work involves individual tasks and associated responsibility, as well as the principle of shared responsibility, where students check and review each other's subtasks for the sake of collaborative work. According to Fridrich (2023), students actively contribute to discussions, problem-solving activities, and group projects, enhancing their understanding and retention of the material. The students' goal was to ensure that, if everyone contributed significantly, each member could enjoy tangible

rewards. Furthermore, in subsequent lessons, we linked the opportunity to earn stamps to the first three to five finishers in activities such as Kahoot end-of-lesson quizzes.

When creating the thematic plan, we aimed to gradually introduce ERs using various methodological approaches while minimizing stress and building students' self-efficacy for each type of ER. Initially, we organized the students into groups to reduce individual responsibility, thereby minimizing the stress caused by fewer individually performed activities. Table 3 shows the following progression: 1.) The first ER was group-based, reducing individual stress by considering expectations and introducing a new method that was not previously experienced by students. 2.) The first session was offline and aimed at introducing the participants to deductive reasoning. 3.) For offline and/or hybrid ERs, the first two sessions involved collaborative work in 6-member microgroups. For the third session, the number of group members was reduced while maintaining the length of the task. 4.) For digital ERs, we started with paired and three-person group work, then gradually transitioned to individual work after group collaboration.

The summary lesson, featuring a JeopardyLabs game within four large groups (each consisting of five to six members), served a different purpose. This collaborative and frontal approach aimed to accumulate the most points. During this lesson, students could earn the second stamp associated with the gamified assessment system, contributing to the overall stamp collection (eight in total) needed for subsequent perfect scores (Grade 5) in classwork.

Table 3: The evolution of work formats and implementation methods in the experimental group during the development of the ER experience

Lesson Number	Work format				Implementation format	
	Collaborative work - 6 individuals/ groups	Collaborative work - 3 individuals/ groups	Pair work	Individual work	Offline	Digital
1.	x				x	
2.			x			x
3.	x				x	x
4.		x				x
5.				x		x
6.		x			x	
7.				x		x
8	x					x

Source: own source

Findings

End-of-unit test

Bloom et al. (1956) compiled the most frequently used taxonomy system, aiming to assist in defining the objectives of various elements in teaching and learning and identifying associated learning outcomes. By considering and applying this system, educators can better prepare students for higher-level cognitive activities.

The end-of-unit test encompasses all the knowledge required by the students based on the printed notes they received at the end of each ER class. This contrasts the experimental group with the control group, where information was partly presented on whiteboard and partly dictated by the teacher, with students expected to transcribe it into their notebooks.

The individual end-of-unit tests were graded on a 1-5 scale based on the student's performance. We compared these grades with other geographic grades obtained in the same academic year and with previous years' science grades for the same set of students. A moderately strong correlation ($0{,}50 < r < 0{,}71$) was found between the two variables. This indicates a significant relationship between the final grades of previous years and the end-of-unit test, with a positive correlation observed in all instances.

Table 4: Pearson correlation coefficients of the end-of-unit test results with those from previous years

	7th grade: Previous geography grades	End of 6th grade: Science grades	End of 5th year: Science grades
Pearson Correlation	.506	.562	.714
Sig. (2-tailed)	.023	.010	.000

Source: own source

According to these findings, the results of the end-of-unit test were similar to the students' previous performance. This suggests that student performance may be less sensitive to a new teaching method in a relatively short period. Further investigation is required to determine the extent to which these results reflect students' genuine understanding and knowledge of the examined topic. Two relevant studies have reported similar results when examining the achievement of learning objectives through pre- and post-knowledge tests. Neither Cotner et al. (2018) nor Clauson et al. (2019) observed an improvement in academic performance following ER implementation. However, Eukel et al. (2017) concluded that the competitive nature of the learning environment created in the context of ERs may motivate students to study the content, but that knowledge growth cannot be solely attributed to the game.

Table 5: Task averages grouped by Bloom's taxonomy levels

Bloom's taxonomy levels	experimental	control
only remembering	36%	48%
remembering with higher cognitive levels	70%	63%
understanding with higher cognitive levels	47%	52%
only application	81%	80%
only analysis	48%	57%
analysis and evaluation	65%	62%

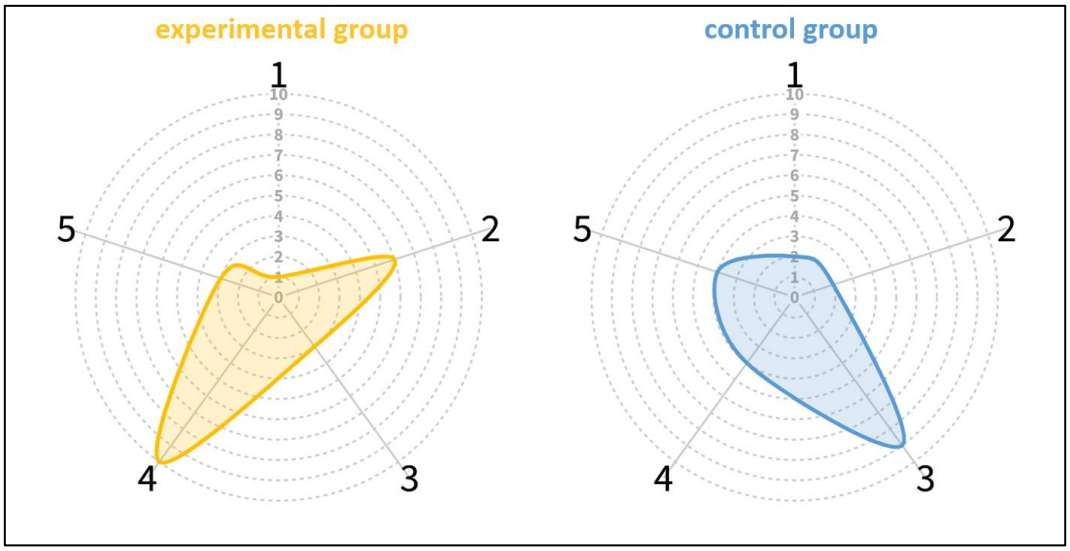
Source: own source

The examination of performance by task according to Bloom's taxonomy allows us to better understand the specific contribution of different teaching methods to students' overall performance. The experimental group demonstrated greater proficiency in higher-order cognitive domains (remembering and higher cognitive levels and analysis and evaluation), suggesting the effectiveness of the intervention in fostering advanced cognitive processes. Conversely, the control group performed well in the foundational (only remembering) and analytical (only analysis) domains. Both groups performed similarly in "only application" category, while the control group showed a marginal advantage in "understanding with higher cognitive levels". These nuanced findings underscore the multifaceted impact of instructional methodologies on distinct cognitive abilities, suggesting that further investigation is necessary to determine the taxonomic levels at which students engage in active learning.

Classroom attention

In the control group, we employed only the frontal teaching method. Thus, preparation for classes took less time, and methodologically, the focus was on a culture of questioning. Despite the methodological simplicity, students reported enjoying the classes. During frontal teaching, due to the lack of constant student activities, students were less able to pay attention during the whole period, as they were not directly involved in the learning process. To assess sustained attention, we asked the following question in the concluding questionnaire: "*I feel I can pay attention throughout the entire lesson*". The results are presented in Figure 4. A score of 1 indicates that the student feels unable to pay attention throughout the entire lesson, while a score of 5 indicates that the student feels able to do so.

Figure 4: Graphical representation of the responses to the question "*I feel like I can pay attention throughout the entire lesson*" by class. (1 = no; 5 = yes)



Source: own source

A comparative measurement of students' attention retention revealed the following results between the control group (n=21) and the experimental group (n=23): In the control group, 38% of the students marked high scores (4 or 5) in response to the question regarding attention retention, 43% marked medium scores (3), and 19% marked low scores (1 or 2). In contrast, in the experimental group, however, 56.5% of the students marked high scores, 13% marked medium scores, and 30.5% marked low scores. Notably, the distribution of middle scores in the experimental group was asymmetric and right skewed, indicating that most students rated their ability to sustain attention higher.

Popularity of the lessons

The popularity of the lessons was measured by the concluding questionnaire. The results are presented in Table 6. Students were asked to evaluate the lessons using a 7-point Likert scale. The data were analyzed and compared across classes, with percentages color-coded to represent their distribution.

Table 6: Escape room reviews by the experimental group

Lesson number		1	2	3	4	5	6	7
evaluation		frequency [noun]						
least good	1	45%	5%	9%	14%	5%	9%	5%
less good	2	14%	14%	27%	5%	14%	9%	9%
acceptable	3	9%	5%	9%	23%	18%	32%	9%
average	4	5%	18%	9%	14%	9%	23%	27%
good	5	5%	36%	9%	14%	27%	9%	5%
very good	6	9%	14%	14%	18%	14%	14%	23%
best	7	14%	5%	23%	14%	14%	9%	27%
evaluation mode		1	5	2	3	5	3	4

Source: own source

Urban and agricultural geography classes received lower evaluations in both classes, likely due to the curriculum content. In contrast, population geography and infrastructure classes, which offered more practical knowledge, were generally preferred. The infrastructure topic in the experimental group may have been more popular due to its use of less scientific terminology compared to digital ER, making it easier for students to follow.

In terms of ER, the offline sessions covering population geography, the geography of Budapest, and energy industry classes seemed to be the most popular. This was somewhat surprising to us, as we initially expected classes utilizing ICT tools to be more favored.

The methodological variations summarized in the methodological overview aided the students, as indicated by the concluding questionnaire. For statement (E12), "*Over time, I felt the ERs became easier*" the responses had a standard deviation of 0.848. We obtained a mode of 5 on a 5-point Likert scale, with 39% of students rating it as 5, 30.5% rating it as 4, and 30.5% rating it as 3. There were no ratings of 1 or 2, indicating that the students successfully adapted to the new methodology, and began thinking in a deductive, problem-oriented manner over time.

Among the various types of ER, offline ER has shown divisive results, with students evenly marking all values. In contrast, for tablet-supported ER, students reported clear improvements in problem-solving and thinking (Huang et al., 2020; Vass, 2021).

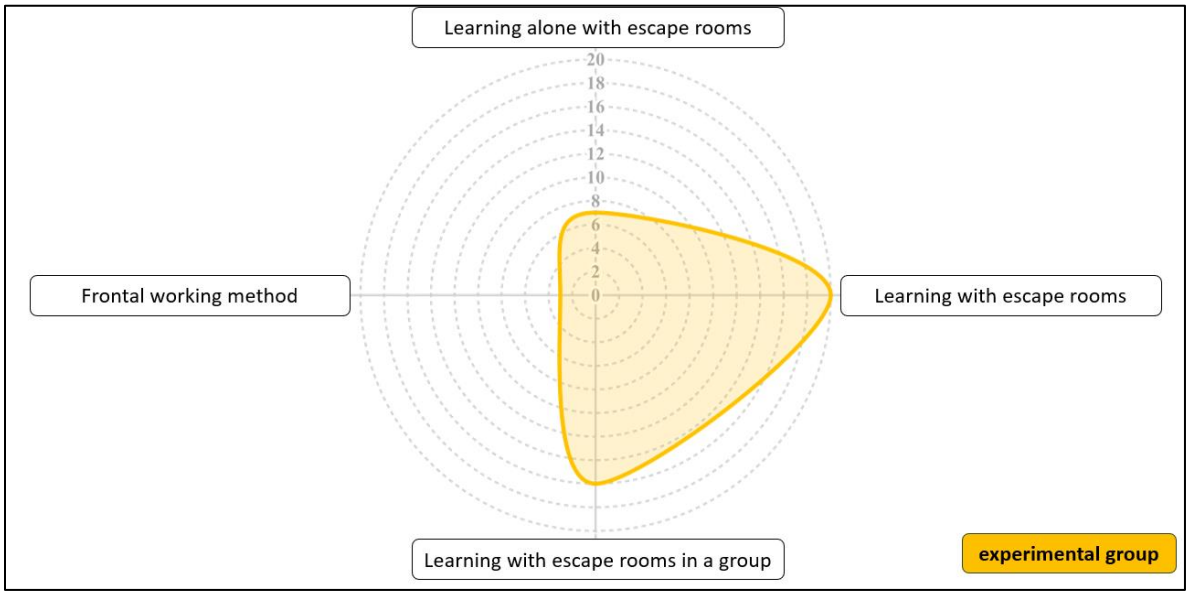
In the experimental group, participants were successful in understanding the different types of tasks, as indicated by their responses to the question (E13), "*I find it difficult to understand the types of tasks in class*". With a mode of 2 and a standard deviation of 1.096 on a 5-point Likert scale, 65% of participants reported no difficulties with the task types, 22% occasionally experienced challenges, and 13% frequently struggled with understanding. These ratios align with the observations, indicating that only two to three participants required additional assistance in interpreting the tasks, including one student with special educational needs.

Students' learning preferences

In the concluding questionnaire, students' learning preferences were examined based on their experiences. Four questions were presented to each group, two of which were similar. They had to choose the one they could better identify with in terms of learning.

In Figure 5, we depict the results of the experimental group's survey. These findings show that the vast majority of students enjoy learning with ER and would continue to learn this way in the future. Students expressed satisfaction from the sense of autonomy, exploration, ownership, and mastery attained during gameplay. It is imperative that educational games are meticulously crafted to facilitate these experiences (Arnab et al., 2015; Barab et al., 2010; Lameras et al., 2017). Regarding the preferred learning format, students tended to favor ER sessions in groups, possibly due to opportunities for social interaction and lower individual responsibility (Forsyth et al., 2002; Weldon & Mustari, 1988).

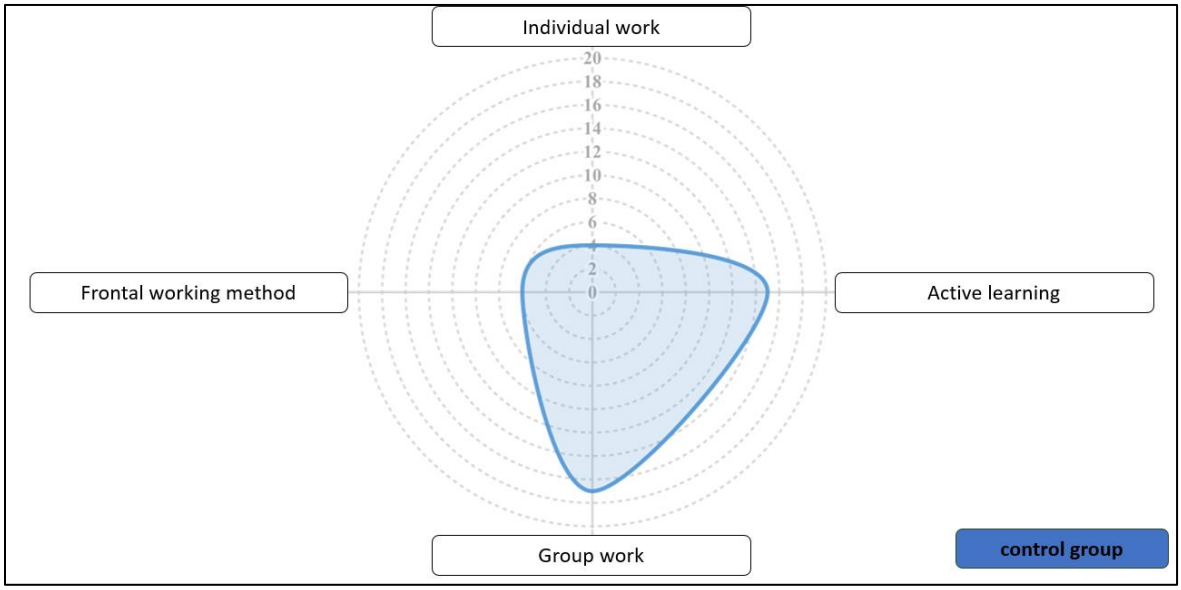
Figure 5: Graphical representation of students' learning preferences in the experimental group



Source: own source

Figure 6 displays the survey results for the control group. Based on these questions, it appears that most individuals in the control group prefer group work in the learning process. Additionally, given the characteristics of Gen-Z, it is likely they would have favored more active learning methods during the experimental period as well.

Figure 6: Graphical representation of students' learning preferences in the control group



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Summary and Discussion

The comprehensive results of the study indicate that students in the experimental group, who were exposed to an escape room (ER) methodology, exhibited heightened engagement and sustained attention compared to those in the control group. The concluding questionnaire responses from the experimental group indicated that most students felt capable of sustaining attention throughout the entire ER lesson, suggesting that ER learning contributed to extended periods of concentration among students. This observation aligns with previous research highlighting the enhanced enjoyment associated with ERs (Abdollahi et al., 2021; Peleg et al., 2019; Veldkamp et al., 2021; Watermeier & Salzameda, 2019). Notably, the popularity of lessons, particularly those utilizing offline ERs, increased over time, with students perceiving ERs as progressively easier and indicative of improved problem-solving skills.

The study further revealed that students in both the control and experimental groups generally preferred group work. In the control group, the concluding questionnaire indicated a preference for group work during the learning process. Similarly, in the experimental group, students not only enjoyed learning with ERs but also tended to favor collaborative ER sessions. This inclination toward collaborative work within the context of ERs aligns with the opportunities for social interaction and shared responsibility inherent in such learning environments. The advantages of collaborative work, as recognized in the literature (Barak, 2017; Herrington & Oliver, 2000), were evident in the perceived benefits reported by students.

In certain classroom topics, traditional methods have proven to be more popular among students compared to ICT tools. The findings suggest that topics offering more practical knowledge, such as population geography and infrastructure, were generally preferred. This indicates that practical relevance and relatable content play crucial roles in maintaining student attention. In contrast, topics like urban and agricultural geography received lower evaluations, possibly due to the inherently less engaging curriculum content. The effectiveness of different teaching methods is influenced by both subject matter and desired learning outcomes. While tablet-supported methods have shown promise in enhancing problem-solving and critical thinking skills, they may not be equally suitable for all topics. Paper-based escape rooms, for instance, can offer a tangible and interactive learning experience, particularly when the subject matter is complex or requires hands-on exploration. Students often find these methods engaging and effective in fostering a deeper understanding of the material. Ultimately, the choice of teaching method should be carefully considered based on the specific learning goals and the nature of the content.

The exploration of the results of the end-of-unit test revealed a correlation between ER methodology and student performance, suggesting a positive relationship. Further analysis using Bloom's taxonomy indicated that the experimental group outperformed the control group in tasks requiring higher cognitive levels and evaluation. This finding underscores that ERs not only engage students but also enhance their ability to perform complex, evaluative tasks.

The research findings underscore that ER aligns well with the learning preferences of Generation Z (Gen-Z) students. Gen-Z. Characterized by a preference for practical learning opportunities and an active engagement approach, Gen-Z students responded positively to ER learning. The experimental group not only expressed satisfaction but also indicated a preference for future learning through ER methods, emphasizing the alignment of this innovative and gamified approach with Gen-Z's characteristics and preferences.

In conclusion, the study provides valuable insights, suggesting that integrating ERs into geography instruction enhances student engagement, attention, and learning outcomes. These findings offer important guidance for developing effective teaching strategies tailored to the preferences and learning styles of Gen-Z students.

Limitations

One of the limitations of the present study is its sample size and generalizability. This research focused on a specific cohort of seventh-grade students from Hungary, which restricts the applicability of the findings to a broader population. To enhance the external validity of this research, future studies should employ a larger and more diverse sample across various grades, regions, and educational systems.

Another constraint is the short duration of the experiment. The limited timeframe may not have been sufficient to capture the potential long-term effects of the ER methodologies employed. An extended experimental period is recommended to better understand the sustainability and enduring impact of incorporating ER techniques into student learning.

Another limitation of this study is its focus on geography education. While valuable insights were gained within this domain, the direct applicability of the results to other subjects remains uncertain. To address this limitation, further research should explore the transferability of the ER method to other academic disciplines.

Furthermore, reliance on self-report measures, such as student questionnaires, introduces potential biases into the study. To strengthen the research design, future investigations could benefit from incorporating objective measures and observational data to provide a more comprehensive and reliable understanding of the impact of ER methodologies on student learning.

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Attila Tibor Kovács

USE OF TERMINOLOGY AND (META)LINGUISTIC AWARENESS IN GRADE 4 – EXPERIENCE FROM A PILOT STUDY

Abstract
To understand the texts we read, we need language use and linguistic knowledge, as well as metalinguistic awareness related to the text. We examined linguistic and metalinguistic awareness in two areas: at the level of compound words and in relation to words with suffixes. We operated with the following assumptions in our action research:
H1: The participants achieve better results in tasks related to affixed words.
H2: Those who can justify their answers and reflect on their question answering process using grammatical terms will achieve better results in completing the worksheet.
The 15-task test measures metalinguistic knowledge related to compound and suffixed words. The solutions require either implicit or explicit elaboration. Out of the 36 utterances in the "interpretative" text, grammatical metalanguage-related expressions were used by the informants in 13 cases. Through the use of quantitative content analysis, the study could contribute to the development of native language methodology and grammar teaching in lower primary education.

Keywords: metalinguistic awareness; grammar teaching; mother tongue education

Introduction

In first language education in lower grades, the development of linguistic awareness became a priority in the 2020 National Core Curriculum. If we adhere to the principle of inductive grammar teaching, we can also accept that linguistic awareness, especially metalinguistic awareness, should be built gradually with respect to the level of students' knowledge. It follows that the transmission of metalinguistic knowledge is possible only after they have acquired enough linguistic knowledge. (Zipke, 2021)

The most important task for lower graders is to gain, analyse and interpret linguistic experience. The concepts and structures related to the development of linguistic awareness in textbooks in lower grades and grammar teaching require further refinement. The question is whether, based on international literature, Hungarian textbooks and first language education will integrate the language pedagogical aspects of these assumptions into the lower grades in the future (Juhász, 2021).

Metalinguistic Awareness

Metalinguistic awareness develops gradually. It is fundamentally instinctive, but during the teaching-learning process, it becomes a conscious activity, evolving in parallel with cognitive and linguistic development (Adamikné, 2006a: 149–150). Generally, around the age of six, at the beginning of school age, children are able to recognize the differences

between linguistic elements and intuitively apply these during communication (Bialystok et al., 2014). Metalinguistic skills can be related to different levels of the linguistic system. Thus, we can talk about the phonological, morphological, syntactic, and pragmatic components of metalinguistic awareness (Csépe, 2014).

In order to understand written texts, linguistic knowledge, knowledge related to language use as well as text-related metalinguistic awareness are necessary (Adamikné, 2006b; Csépe, 2014).

We can say that metalinguistic awareness is a skill that develops with age: one must first understand linguistic units in order to be able to talk about them. According to Gombert (1992), context-independent knowledge about language can be regarded as metalinguistic knowledge.

If we want to distinguish linguistic awareness from metalinguistic awareness, we can say that linguistic knowledge involves a kind of categorization skills, the recognition of linguistic elements, and the manipulation of these elements, while metalinguistic knowledge involves the assessment of linguistic elements from formal and semantic perspectives, matching these elements, and the ability to make statements about their appropriate formation (Juhász, 2023).

Different levels of linguistic awareness can be distinguished. One part pertains to decoding reading: phonological and orthographic. The other part includes categories based on comprehension, such as semantic, syntactic, and pragmatic levels. Morphological awareness represents an intermediate level, which can refer to both aspects of reading (Juhász–Kegyes, 2022).

Experience from an action research study – Testing the linguistic awareness of 10–11 year-old students

The pilot study was conducted with fourth graders in a primary school in District XVII (Budapest), with a total of 27 participants. We sought to answer the question of what operations (recognition, matching, task execution, interpretation) students can perform with affixed words and compound words. The test, consisting of 15 tasks, measured the retrieval of metalinguistic expressions related to compound words and affixed words. Students were asked to reflect on their own answers. We did not provide criteria for completing the worksheet – we told the children that multiple correct answers could be accepted in the “playful” exercise.

Below, we limit ourselves to the description and presentation of those results that are important for the overall dissertation.

The research

We created a worksheet with several tasks in September 2023 in order to answer the question whether fourth graders use the terms and metalinguistic expressions (affixed words, compound words, antonyms, etc.) from their grammar books. The first research question was: Do the students involved in the research use the terms (metalinguistic expressions) from their grammar books when they need to explain certain linguistic phenomena, rules, or relationships?

We examined (meta)linguistic awareness at the level of compound words and affixed words. The tasks were based on textbook examples. We were also interested whether compound nouns or affixed words were easier for students to learn and recall. We formulated the following hypotheses:

H1) The participants achieve better results in tasks related to affixed words.

H2) Those who can justify their answers and reflect on their question answering process using grammatical terms will achieve better results in completing the worksheet.

Another objective of the research was to measure attitudes towards the grammar textbooks used in the lessons. In other parts of the worksheet, students had to create and define compound words belonging to different word categories. These aspects will not be detailed in the present paper.

The worksheet

The words listed in tasks 5 and 12 can be categorized both as verbs or nouns. The aim was to assess students' skills to recognize and categorize words which can belong to multiple word categories. Can a 9-10-year-old child simultaneously pay attention to both formal and semantic features?

Tasks 8–9 examined the explicit and implicit skills to add affixes to words, first in sentence context and then using visual aids (e.g. figures, tables and diagrams). In task 9, students were asked to complete a group of affixed nouns answering the questions of tridirectionality: where from, where, where to?

Five tasks required student "reflection" or metalinguistic statements after completing the tasks. These include the following:

Task 7.b focussed on the word category of compound words. One of the answer options was: "the word category of a compound word is always determined by the last element" or briefly: "the last element/word", etc. Task 9.b asked students about the criteria for grouping nouns in the table. The answers could refer to affixes, question words, etc. The answer options for Task 10.b were: "synonymous words", or "words with similar meanings," etc.

In Task 12.b, the correct answers were verb and noun, or alternatively the students could have written that the listed words are common nouns and describe actions as well. Task 14 aimed to determine whether the students' answers contained metalinguistic terms. Did the students recognize a strategy for completing the tasks?

Results

Almost half of the participants (i.e. 13 out of 27) answered at least one question referring to metalinguistic knowledge. In Task 7/b, the term *word category* appeared twice. The terms *last element* and *compound suffix* were not mentioned at all. In Task 9/b, the question was: What can be the criteria for grouping? In this task, the term *affix* occurred twice, *question word* three times, and *question* four times. In Task 10/b, the term *synonymous* was mentioned once*, similar meaning* once, while someone gave the wrong

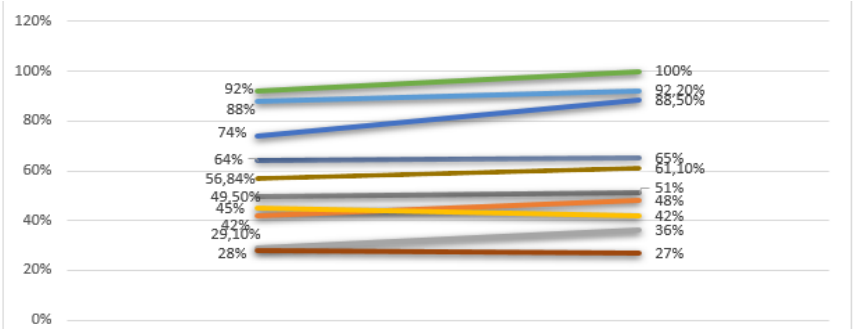
answer *verb with verbal prefix*. The term *verb* occurred four times in the answers for Task 12/b, while *word category, syllable, vowel* and *consonant* appeared once, In Task 14, in relation to defining the strategy for completing the worksheet, the term *word category* was mentioned only once. No other metalinguistic terms related to grammar were found.

The responses of these 13 students contained a total of 36 items that can be classified as metalinguistic elements (53%). When the entire data set is considered, this is 11%.

The results show that students performed better in tasks requiring operations related to affixed words. This may be due to the context created by sentences or texts and the tabular format, which made recognition easier. In the task types related to compound words, the example which was intended to increase analogical productivity did not have much effect.

We then compared the results of those who answered the metalinguistic questions and those who did not complete these tasks. It is clear that, on average, those students who could justify their answers achieved better results (56,8% vs. 61,1%). Based on this, we can conclude that there may be a need to develop metalinguistic awareness and the use of grammatical terms in grade 4, as it is evident that those who could reflect in some form on their question answering process performed better in most sub-tasks.

Figure 1: The relationship between results and reflections that can be regarded as metalinguistic 4th grade students



Colored lines: The results of the tasks. Brown line: Average result. Task completion results projected onto all respondents (N=27) Percentage results of task completions for those who provided textual responses to the interpretive questions more than twice (Nma=13)
Source: (Budapest, 2023, Own Research, Nma=metalinguistic awareness)

Conclusions

Metalanguage plays a crucial role in reading comprehension and the development of linguistic awareness. Also, the knowledge of metalinguistic terms would make foreign language learning more effective. Note that focusing on metalanguage in grammar lessons does not exclude the possibility of making language, grammar, and language learning an enjoyable activity in both lower and upper grades.

Since the knowledge of primary school pupils is usage-based, i.e. they are familiar with the system of language, but in a basically instinctive way. Therefore, first language pedagogy is to expand this metalinguistic knowledge and make it more conscious through various interactions. This can be achieved by presenting symbolic sound-meaning pairs embedded in context and situation, building on the students' previous knowledge of the

mother tongue, and drawing attention to the structural and semantic connections (Tolcsvai Nagy 2013, p. 23).

The development of linguistic awareness plays a major role in the 2020 National Core Curriculum (NCC) – in the Hungarian language and literature specialisation programme. The following sentence confirms that there is a paradigm shift in first language teaching, since the focus is on gaining linguistic experience: "*In order to develop first language skills, instead of learning grammatical rules, students experience the interrelations and functioning of language through creative, playful or experimental tasks using various techniques and strategies, e.g. individual work, pair work, group work and frontal work*" (NCC, 2020).

Textbooks should provide this empirical basis, but the role of creative teachers in developing meta-linguistic awareness is also crucial.

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Gabriella Kállai

LOOK, THAT'S HOW I DO IT! TRY IT! – TEAMWORK SUPPORT WITH ONLINE TOOLS

Abstract
In Hungary, children and pupils with special educational needs are those who, on the basis of a diagnostic assessment by a committee of educational experts, are entitled to additional support for their development. Today, they are often placed in inclusive or integrative kindergartens and schools, where they learn with other children and are assisted in their development by a special needs teacher. Several studies have looked at the role of special needs teachers in inclusive education. Other approaches emphasise collaboration between professionals, and some forms of collaboration are seen as teamwork. Although these collaborations are necessary to achieve the best possible developmental outcomes, they are difficult to achieve for a number of reasons. This paper presents an action research project in which teamwork, i.e. case discussion, solution finding and knowledge transfer, took the form of online collaboration. The methodological framework was participatory action research. Although this form of collaboration was created out of necessity in the institution, the positive feedback and results from the participants show the need for activities and collective learning adapted to the knowledge level and needs of teachers, which help them to deal with everyday tasks and problems with more confidence and self-efficacy.

Keywords: teamwork; participatory action research; special education needs

Introduction

Provision for children with special educational needs in the Hungarian public education system can take several forms. The most important decision situation is to determine whether the child should be educated in a segregated institution, i.e. with other children with special educational needs, in which case he/she will be mainly taught by special education teachers or special education assistants. The other possible option is for the child to learn in an integrated way, in mainstraim schools, i.e. mainly with children who are developing normally. In this case, the child with special needs will be taught by teachers who are not qualified in special education, although they may have acquired this knowledge as part of their training or in further training. In inclusion settings (kindergarten schools and schools), special assistance for children is provided in the context of so-called habilitation-rehabilitation sessions, carried out by special needs teachers. The special needs teacher may be a specialist employed by the educational establishment or may be a so-called travelling special needs teacher from the Unified Institute for Special Needs Education (UIME). In the absence of such a specialist, the institution may employ a special needs teacher with the appropriate professional qualifications on a contract basis. As regards the functioning of the care system, it is important to note that non-private care is

available (and indeed compulsory for children) to children who are declared to have special educational needs on the basis of an assessment by a special educational needs committee.

In order for co-education to be as effective as possible, the creation of a supportive environment is key to the development of children and pupils. This includes ongoing consultation between the special needs teacher and parents, teachers and teaching assistants, in order to better understand the needs of the children and to be able to set and implement development goals, including adapting the curriculum to the children and using differentiated teaching methods. These collaborations can be seen as teamwork, considering all actors as part of the team, including parents as well as the educational system. In this paper, we first introduce the concept of teamwork and its interpretation in special education, which served as a theoretical framework for our study through participatory action research. In our research, we present a form of teamwork that was created under duress, but which, based on the experiences of the participants, can be applied in a wider context, not only in the field of special education. Our research summarises the first cycle of participatory action research.

Literature Review: Teamwork in special needs education

The concept of team is used by several disciplines and different aspects of the concept are highlighted to better understand it. From a psychological point of view, the interaction between members, the knowledge about each other and the fact that members see themselves as a group are important. From an organisational sociology perspective, an important feature is the shared set of norms, the common objective and the different roles assigned to each other by the members. When thinking about the team as a working group, it is important to stress that the group is formed to carry out a specific task, and that the system of relationships within the group is determined primarily by the tasks to be performed

In Meredith Belbin's book on teamwork, Sándor Klein (1998) briefly describes the concept of a team as follows: "*a team is a group whose effectiveness depends to a significant extent on the cooperation of its members.*" (p. 8) In this sense, teamwork can be seen as being based on the establishment and functioning of appropriate cooperation, but other factors are also necessary to talk about teamwork. Belbin also considers it essential to define the goal that the team will be formed to achieve, i.e. to define what the team's task will be. In addition, to be effective, it is important to assess what professionals are needed to bring in and what tools and resources are required.

The possibilities of using teamwork in the field of special education were explored by Kullmann (2015). In her publication, she reviews the literature and highlights the dynamic, interdependent and mutually cooperative activities of the members as a general characteristic, i.e. not only focusing on the aspects of special education (Agency for Healthcare Research and Quality, cited in Kullmann, 2015). In addition, clear role and task assignment within the team, complementary skills of the members and, in this context, strong communication skills, cooperation and the ability to manage conflicts appropriately are also requirements. This also implies that team members must be able to give up

part of their autonomy in order to achieve a common goal. These specificities also point to the fact that the proper functioning of teamwork also depends on the flexible adaptation of its members and that it is fraught with pitfalls. The potential obstacles to teamwork are not discussed here.

If we look at teamwork from the point of view of special needs education, we can say that the members of this profession can be active in many different fields, and that their work can be seen at all stages of human life, from birth to death, since the special needs teacher's role is also one of support and accompaniment. In terms of the nature of the work, the profession of special needs teacher is represented in diagnostic and therapeutic work, but also in rehabilitation, prevention, counselling and coordination activities involving cooperation with other people and professions.

Kullmann (2015) outlines three models for rehabilitation work:

"1. Multidisciplinary team: the team members individually carry out the assessment of the patient/client's condition and the therapeutic and educational activities.

2. interdisciplinary team: joint problem identification and solving, frequent mutual consultation, preparation of an agreed objective and plan with the client and his/her family. Joint rehabilitation goals integrated into the activities of all professionals.

3. transdisciplinary team: team members work closely together with the person concerned, parents, etc., to achieve a common goal, crossing their strict competence boundaries. The assessment of the situation is carried out jointly, their experiences are analysed together. The roles in the therapeutic activity are determined by the needs arising from the current situation. The team members learn together in a collaborative process, involving the people concerned and the parents. The role of therapist is sometimes taken over by the parent. Typically used in infancy and early childhood." (p. 180-181)

It is important to note that in Hungary, the need for special needs education increased when changes in legislation allowed for the increasing co-education of children and pupils with special educational needs (Mile, 2015, Kállai-Mile, 2020), with statistics showing that the proportion of children and pupils with special needs has increased from around ten percent to over 70 percent in the last twenty years. In response to this need, the Unified Methodological Centre for Special Needs Education (EGYMI) and the Travelling Network of Special Needs Education were established, whose task is to create an inclusive environment, i.e. to provide care for children and pupils, to expand and develop teachers' knowledge of disabilities and special educational needs, and to support their work. These services are based on cooperation between the special needs teacher, the parent and the teacher. The work of itinerant teachers includes training teachers, providing ongoing advice, planning the specific activities of the integrating institution, and promoting and maintaining cooperation between the parent and the institution.

Teamwork is also an opportunity for members to learn from each other to achieve a common goal. This does not mean that each member acquires the same depth of knowledge as the other professionals involved, but rather that it provides an opportunity to learn about the perspectives of other professions and professionals, and to understand

the causes and reasons for certain phenomena. At first glance, the members of teams promoting integration in kindergartens and schools do not appear to be equal partners, but it is worth highlighting the fact that the special needs teacher has knowledge of how to implement co-education, while the teacher is familiar with the characteristics of the institution or group in question, so that together they can develop the best solution for the children and pupils concerned.

Social learning theories have been used as the theoretical framework for understanding team learning in the experiment currently being presented.

On the one hand, Bandura's social cognitive theory (1986, 1997) is relevant for us from two aspects: it describes the extent to which we consider ourselves capable of effectively solving our problems through the concept of self-efficacy. Research on teachers' self-efficacy has become a popular topic today (Kóródi et al., 2020), with research indicating that higher self-efficacy is positively related to children/students' achievement (Perera and John, 2020). Self-efficacy is not a fixed personality trait, it can be influenced by different factors, i.e. experience and practice can strengthen our sense of competence (Hoy and Spero, 2005). Another important feature of Bandura's work for us is that he points to the interdependence of behaviour according to the principle of mutual determination, i.e. he argues that it is the interaction of behaviour, personal factors and environmental factors that shape our functioning, and that complex cognitive processes regulate our learning, through which we acquire the behaviour (Horváth, 2004). In practice, this means that learning can take place by observing the behaviour of others, by imitation (model following) and by shaping (reward and punishment), in addition to direct education.

On the other hand, we have also drawn on Vigotsky's theory of social learning (1978). According to this theory, meaningful learning takes place in an interactive environment, i.e. it requires interaction between the participants. Since it is a learning theory, Vigotsky's insight is that in the process, the more knowledgeable party supports the other person (or persons) to achieve the learning goal. In this theory, the learner is at the centre of the learning process, interacting with other learners in addition to the instructor. This theory also includes the concept of the proximal zone of development, which for us should be highlighted as including what the learner can or cannot do without the support of a competent other. For us, this theoretical framework is also important because in the experiment we are about to present, a very similar process took place: team members interacted with each other while gradually acquiring knowledge that helped them to venture into new, unknown areas in addition to the ones they had known before.

This aspect of teamwork, i.e. the sharing of knowledge by one team member with the other team members, can be seen as a mentoring activity, even though the teacher is not called a mentor and the other team members are not called the mentored. Based on these findings, we can accept that interaction-driven peer learning and collaboration results in high quality support relationships, with members also learning from each other's experiences and ideas, with Ragins (2016) and Connolly (2017) reaching a similar conclusion in their research. In relation to the relationship between mentoring and teamwork, we argue that knowledge sharing, peer learning or learning from one person is not a necessary fea-

ture of teamwork, but may occur in interdisciplinary teams and is more common in transdisciplinary teams. On the other hand, the aim of mentoring is to support the mentee in one or more areas, and by definition the focus is on the individual development of the mentee.

After an overview of the theoretical framework, the next part of our paper will present the main results of a participatory action research. The action research took place in a kindergarten where the travelling SEN teacher responsible for the care of children with special educational needs developed teamwork with kindergarten teachers and assistants who were responsible for the children's education on a daily basis. As the task of all participants is to create an appropriate and inclusive environment for the children, and for this task special needs education knowledge is indispensable, it is also emphasised here that the cooperation is an expectation in the relevant legislation (SEN guidelines, Public Education Act). However, this area is not regulated in detail, so the legislator leaves implementation to the parties involved. As a consequence, although the task itself is reflected in the job descriptions of special needs teachers (Mile, 2016), implementation is shaped by institutional and individual options, and practical implementation can be very diverse.

In the present case, in addition to face-to-face meetings, the itinerant paraeducator has attempted to provide consultation opportunities for kindergarten teachers and assistants in the online space. The implementation of this and the way to get there is presented in the next section.

Methodology

Our research was conducted within the paradigm of participatory action research, i.e. we sought to link theory and practice and to find practical solutions to problems. This means that instead of traditional, academic research, where in most cases the interaction between researcher and researched takes place in a single moment (Málovics, 2018), we were both part of the research and subject of the research, i.e. we participated in a dual role as researchers, with the continuous cooperation of the participants: On the one hand, as a travelling teacher educator, with the intention of improving the practice, looking for solutions to the issues raised, and on the other hand, as a researcher, observing and analysing the events from an external, observer's perspective (Csillag, 2016 cited in Zank, 2020). However, in doing so, the intense engagement and involvement in the process compromises researcher objectivity (or intersubjectivity), while participatory action research does not consider social research as value-neutral (Málovics, 2018). Although the application of this paradigm is still little known in Hungary, according to international literature, neither self-observation nor the use of participatory action research in pedagogical work is alien to the development of pedagogical practice. Participatory action research does not represent a standardised process, but it is important to underline that these processes are developed through group work, with action and reflection phases following each other, as a cyclical process. The methods and methodological rules of participatory

action research can be diverse: social science methods (questionnaire, interview, participant observation, etc.) are well suited but not exclusive: 'the primary test of the quality of the knowledge generated is its practical operability (Málovics, 2018, p1154).

The central question of our research is how we can work as a team for the effective development of children with special educational needs, what forms of cooperation and opportunities are available to us.

This micro-research can be interpreted as a pedagogical experiment that involves both rapid problem solving and service development (Csíkos, 2020), but we are guided by a cyclical approach in our research model. Now we share with the reader the experiences of the first cycle.

In the present case, we have described the processes retrospectively, relying on qualitative tools (interviews, reports). The sample, i.e. the site of the research, is a single institution (kindergarten) where teamwork in hybrid spaces has been introduced on an experimental basis. Although in our participatory action research we primarily developed the teamwork based on our own experiences, i.e. those of the team members, and also made sure that the direction of development was continuously in line with the needs of the team members, we also conducted interviews with the team members at the end of the school year. This method allows us, as researchers, to carry out an in-depth analysis of the experiences of the team members. In addition to the interviews with the team members, observations were also carried out. The observations focused primarily on children's behaviour within the group and changes in this behaviour, but also covered changes in the behaviour of the kindergarten staff towards particular children and changes in communication about children. These experiences were considered to be the primary focus, and the conclusions drawn were a reflection on the action taken.

Location of the research

The municipal kindergarten where the action research is carried out is located in a district of the capital. It is located on the border between a residential area and a family house zone, with six groups of mixed age. Seven percent of the 124 children attending have special educational needs, which is twice the national average for kindergartens (KIR 2022/23). They have more than 20 years of experience in co-education, mainly with children diagnosed with other mental development disorders and autism spectrum disorders.

Kindergarten staff

Among the participants, five worked as kindergarten teachers and five as assistants in kindergarten groups with children with special educational needs (the number varied between one and three per group during the school year under study). Two of the assistants were qualified as special needs teaching assistants and three as teaching assistants without specialisation. It is a maintenance principle in the kindergarten that each group should have at least one person with a pedagogical assistant qualification in addition to the kindergarten teachers to support the children concerned. The aim is to create a stable developmental environment, but there is a problem of turnover during the

school year: one kindergarten teacher had to be replaced due to long-term illness and two of the assistants left and had to be replaced in order to function properly. Although the necessary staffing conditions were met during the school year, several teachers have indicated that they will change and will no longer work at the kindergarten from September or later. The low salaries of assistants do not make it easier to find and keep the right people in the right jobs.

Participants - kindergarten, teams

For the research, interviews were conducted with kindergarten teachers, pedagogical assistants or teaching assistants who were in contact with the special education needs teacher, i.e. the special needs teacher was providing habilitation-rehabilitation sessions for children with special educational needs in the group in the context of travelling special needs education during the school year. They also took part in the teams for the development of the children.

In total, this involved ten people in four teams. In special needs education, as in the health model, teams are set up for the development of a particular child and their composition varies depending on the professionals involved. It would be reasonable to argue that in the present case, too, individual teams were formed, but there was no possibility of involving external staff, and although the kindergarten and the special needs teacher were in constant contact with the parents, they were not involved in the professional work, and the professional teams were formed following the kindergarten group structure. Some groups had two children, others only one. The kindergarten staff (kindergarten teachers, teaching assistants) were assigned to the group. In addition to the children in the group, they were aware of the children with special educational needs in other groups and knew them to some extent, but were not involved in their development. An argument in favour of teams forming along the lines of groups is that the discussions often focused on the development and progress of both children, which does not mean that the development goals and plans of both children and their implementation are the same, but rather that it was a question of differentiating and understanding the difference, for example, that the method used for one child is not necessary for the other or should be implemented in a different way. The resulting teams followed the interdisciplinary model. Collaboration, consultation, task sharing and reporting were traditional in the teams, but the development of one child made it necessary to choose a different format. This team became the participatory action research team.

Special needs teacher

The special needs teacher works part-time as a travelling special needs teacher, is not employed by the kindergarten school, but is a member of staff of a single special needs methodological centre. She has four years of professional experience in this field, but also has other co-professional experience which she can use to build relationships with parents and staff in educational establishments. Although half of her time is specifically dedicated to child development, the remainder is spent travelling between institutions, doing

the administration, preparing equipment, planning lessons and liaising with adult stakeholders. In her view, the latter is the most difficult task, because practical experience shows that it is difficult to find a time slot that is suitable for coordination. Fortunately, life in kindergarten schools is not as tied up as life in schools. But as there are two sessions a week for the development of the six children, and the sessions have to be completed by lunchtime, it is necessary to work in very quick shifts. The kindergarten teachers and assistants can only be contacted briefly to discuss the most urgent, topical problems. On the other hand, the kindergarten staff are not always receptive when it would be convenient for the teacher: they may be ill, substitute, go for training, etc., and even when they are there, they have work to do in the group, so the coordination is done while they are attending to the children.

Results: The cyclical process - first cycle

In this short chapter, we show step by step how the team arrived at the right communication channel for them:

Identification of the problem: There was a boy with special educational needs whose family came from abroad and whose parents did not speak Hungarian. The parents could communicate in English, but the child did not speak English or Hungarian. There were a lot of tasks to be done with him, which had to be constantly coordinated.

Action: All members of the team were open to consultation and close cooperation, but due to their busy schedules, they could not find a time to meet and discuss the actual and necessary steps of the development.

Reflection: all members of the team agreed that it was necessary to find some way to carry out the discussions. The expectation was that such a session should be easily accessible and accessible to all, so that those who could not join the discussion in real time could be informed. At this point, a solution was proposed to create reminders, but participants rejected this because they felt that email was time-consuming and that too much effort was needed to write and send them, and to read and interpret them. Along these criteria, the group members used a brainstorming session to explore the online options available to them.

Redesigning the action: the solution was finally to create a messenger group, to which the group administrator added everyone who worked with a particular child in the kindergarten. The chat allows for group calls for discussions, but also for text messages and sharing of documents (pictures, videos, pdf files, etc.). The advantage is that all participants have the app on their mobile devices, so there is no need to install it and learn how to use it; it is possible to immediately detect when someone asks a question, shares information or reflects on something. It's easy to follow information, but at the same time, it doesn't expect everyone to join the conversation at the same time, everyone can stay informed and communicate when it's most convenient for them.

Experiences (reflections)

The chat group to support teamwork was reported as useful and successful by all. The careful and measured communication that characterised the group at the beginning

quickly changed and became more direct. The topics and content of the conversations also changed and evolved, with participants becoming more and more courageous in reporting problems and tasks that they faced in their everyday lives.

SEN teacher said: *"At the beginning we communicated in writing. Everyone wrote down their current problem. I gave them advice, made tools and brought them to the kindergarten. I could make them completely ready-made, but I also had them laminate, cut out and velcro the cards. Then they started sending photos of the child using a tool or tackling a new challenge. The pictures were accompanied by small descriptions and reflections. The photos were then turned into films, not only for me but also for the parents. There was always another challenge. We also tried group discussions, but we were less successful, because in the afternoons and evenings we couldn't give ourselves free time in the same way, and those who didn't have time felt they were missing out."*

The SEN teacher said that it was very important to build trust between her and the group members. She also considered it important to strengthen the professional self-image and self-efficacy of the kindergarten staff because of their different competences and the fact that they crossed them periodically:

"The messenger worked very well. I know I'm just giving the message, but in everyday life they are there, they have to cope, they have to overcome difficulties. That's why every time they post a picture or a video, I can't stop praising them. And I never forgot to praise them when I met them in person. It is very important that they have a sense of achievement, that they dare to take the initiative, that they have ideas. I don't want them to depend on me, but I also want them to indicate when we really need to apply professionally correct solutions."

Overall, from a special needs teacher's point of view, the chat group has been a significant support to the professional work.

As already mentioned, the kindergarten teachers and teaching assistants participated in the chat with varying degrees of intensity: some only read and at most indicated with reaction buttons, while others were more active. Nevertheless, they were equally successful in using the tools in the classroom, which was necessary because, although there was a division of tasks between the members, they had to take over from time to time (for this child, the meal and the nap after lunch were critical) and there were general rules of behaviour that all educators had to expect equally from the children (no queuing, no destructive activities, use of appropriate volume, etc.). The kindergarten staff already had experience of educating children with special educational needs and these experiences provided a good basis for their work, but the tools and procedures to be used were not entirely clear and adaptation to the child needed to be facilitated. The experiences gained also made them aware of the importance of asking for help in a given situation. *"I don't know what to do with him, he doesn't speak Hungarian, he's obviously not interested in storytelling or talking. Should I learn his language? I don't have the capacity."* The teaching of Hungarian as a foreign language has brought a new opportunity to the life of the kindergarten group: through continuous experimentation, we have managed to develop and expand the Hungarian vocabulary of the little boy. The children were also involved in the process: naming and practising objects provided many opportunities for playing together. *"It was an important sign that the teacher took photos of what she taught the child and we*

were able to practise it in the group, and of course he learned other words easily. I had information, and I gave it too."

The assistant commented, *"I don't know, it was so obvious to me that we would chat. Then it turned out that not everyone thought it was easy. But it was good to have someone to talk to, because he's very cute, but sometimes it's very difficult to work with him."*

Overall, looking back on the whole year, one of the kindergarten teachers summed up the experience this way. *"Now, in June, we know that next year he will go to another school, and we cry together because he is leaving us. Because all in all it was very difficult, but it was also very productive work."*

Living the experience – planning the next cycle of participatory action research

At the end of the first cycle of micro-research, it is legitimate to ask in which direction the teamwork supported by the chat group can be taken forward and developed further, and whether it is worth thinking about other online activities. The team will determine the future direction of research and experimentation, but the teacher has already started planning her own activities. I'm going to set a fixed time slot when we can meet orally, either in groups or individually. But I've also thought about it further: I'll have a group where I'll invite everyone we work with in a given school year and run it like a club. One session every two weeks, where we talk about children with special educational needs and look for solutions to the difficulties they face. I can also imagine inviting parents, which would be very much needed.

Limitations

The first phase of our participatory action research presented here describes the innovative use of ICT tools by only one little group. This may call into question the generalisability of the results, as it has not been tested in more groups, but the small to large successes in practice show that the tool can support effective teamwork more widely.

Conclusion

In our research, we have attempted to apply participatory action research to the field of education. Although action research is still underused among research methods in our country, its focus on practice allows it to form a bridge between science and practice, and the steps, experiences and results of the cyclical process of participatory action research can be used in other settings as case studies. This method can be particularly important in the education of children and pupils with special educational needs. The first phase of the action research presented in this study, which was planned for two years, was a joint action and teamwork supported by online tools and was created by necessity. Although communication through infocommunication channels is already common practice among teachers and parents, the creation and use of chat groups for exchanging experiences, sharing knowledge and conducting teamwork is not yet widespread in our experience. It has the advantage of providing a wide range of information sharing possibilities: in addition to written text messages, you can also send verbal messages, attach photos and

videos, video models, and share other types of files. In addition, it is a very important feature that it allows for online live meetings. its use in teamwork allows members to communicate in a diverse and fast way, while written messages are non-volatile and can be viewed at any time. The nature of the tool makes communication more informal and democratic, but this depends on the ability of the participants to cooperate. It provides a space for learning from each other, encouraging each other, reporting on successful or unsuccessful actions. It is an opportunity to reflect on others and to develop self-reflective skills, which will feed back into professional work and is expected to increase a sense of self-efficacy. This is one of the keys to the proper development of children. On the other hand, teamwork supported by chat channels is likely to be successfully applied in other areas of pedagogical work, helping horizontal learning, and supplementing or replacing the face-to-face meeting.

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Mátyás Bánhegyi – Gabriella Horváth-Csikós – Balázs Fajt

ASSISTING UNIVERSITY STUDENTS' SKILLS DEVELOPMENT THROUGH SELF-DIRECTED AND SELF-ACCESS LEARNING ACTIVITIES

Abstract
This paper explores the potential role of higher education institutions in equipping students with essential skills for their future careers through self-access and self-directed learning activities. The study focuses on a comprehensive student development framework available at Budapest Business University. Through self-access and self-directed learning as well as innovative educational practices and strategies – such as peer collaboration, project-based learning, telecollaboration, skills for life, individual learning accounts, language skills for business and upskilling – students are provided with dynamic and engaging learning environments that prepare them for the complexities of the global job market. Introducing concrete examples from the University's initiatives, the paper illustrates how self-access and self-directed learning activities enhance students' business skills development. The study concludes by advocating educational approaches that empower learners to take control of their learning journey, thereby potentially equipping students with lifelong learning skills essential for navigating in today's ever-changing world of work.

Keywords: self-access; self-directed learning; business skills

Introduction

Higher education plays a crucial role in equipping tertiary-level students with the skills necessary for the future: these institutions empower students with high-level skills thereby fostering their professional, social, and personal development. Throughout university years, students at Budapest Business University acquire a range of essential soft skills tailored for business environments. As one of the leading business universities in Central Europe with international recognition for its excellence, Budapest Business University aims to equip its diverse student body of approximately 20,000 individuals, coming from over 90 countries, with practical business knowledge essential for both domestic and international job markets. Over the course of university education, Budapest Business University's students experience peer collaboration, project-based learning, telecollaboration and business skills development in the framework of self-access and self-directed learning. In addition, the University also supports self-access and self-directed learning through the development of various soft skills, personal learning plans and foreign language skills, as well as through upskilling geared towards business education and business environments.

Literature review

Today's work environments require more than merely hard skills, therefore the incorporation of soft skills development in educational programmes is indispensable (Lepeley, 2021). Soft skills are not easily attained: typically, individuals acquire them gradually over time as they accumulate experience in their respective roles (Rasli et al., 2020).

Soft skills have gained increased importance at the workplace. As attested by the Global Talent Trends 2019 report by LinkedIn (Global Talent Trends, 2019), 92% of professionals consider soft skills to be as crucial as, or even more crucial than, hard skills. Furthermore, 85% of workplace success is credited to possessing robust soft skills, whereas only 15% is attributed to hard skills (National Soft Skills Association, 2015). Seetha (2013) also highlights that employers tend to prefer and endorse individuals who demonstrate resourcefulness and the ability to work both effectively and independently and possess strong soft skills. According to a survey of 3,100 recruiters from eight countries (US, Canada, UK, Germany, France, Italy, Sweden, and the Netherlands), the top soft skills sought by employers include dependability, teamwork and collaboration, problem-solving and flexibility (Monster, 2022). Another recent survey conducted by Wiley University Services (Wiley, 2021), which involved over 600 human resources as well as learning and development professionals, highlighted critical thinking, communication, creativity and analytical skills as the most requested soft skills at companies. In the scope of current changes in the landscape of university education, some tertiary institutions specialising in business education offer self-directed learning and self-access opportunities as part of students' skills development.

Self-directed learning

Generally speaking, self-directed learning involves the ability to take initiative, set goals, organize resources, and manage one's own learning process effectively. Self-directed learners are proactive in seeking information, solving problems, and adapting to new situations, which are valuable attributes in both academic and professional settings.

According to Keengwe and Kungu (2019) self-directed learning is "*a learning strategy which allows learners to take charge of their own learning process (diagnose learning needs, identify learning goals, select learning strategies, and evaluate learning performances and outcomes)*" (p. 1240). In their research, Parker and Williamson-Leadley (2023) confirmed that in today's society, the emphasis of adult learning predominantly revolves around catering to the requirements of adults within their societal and professional environments. In other words, self-directed learning is the process of identifying one's own potential in formulating learning goals and eventually making efforts to reach these goals (Pooja et al., 2023).

O'Connor (2020) delved deeper into the concept of self-directed learning and focused on the examination of one of its facets: the behaviours and characteristics exhibited by self-directed learners. According to him, behaviours and characteristics associated with self-directed learning are related to intrinsic motivation, integrity, diligence and perseverance, which are thus to be fostered for developing self-directed learners.

In his study, Chukwunemerem (2023) summarizes the results of a study examining and analysing the benefits of self-directed learning and reveals how these activities improve learners' critical thinking skills. The research findings indicate that the development of critical thinking skills, communication skills, time management, information search skills and openness or non-openness to others can also take place through self-directed learning activities. Based on the above definitions, self-directed is defined in the scope of this paper as "*the process of being in command of one's own learning path, through taking the initiative to set own goals, identifying learning needs, formulating learning goals, identifying resources, implementing appropriate learning strategies, and evaluating the outcomes of the learning process*" (Jared et al., 2023, p. 50).

Self-access

The commonality among the definitions of self-directed and self-access learning is their emphasis on individuals taking responsibility for their learning process and the utilization of self-access and self-directed learning methods. In the framework of these two learning methods, learners take control of their learning journey and its pace as well as develop related and necessary cognitive, metacognitive and social functions (Thornton, 2020). Mynard (2022) defines self-access learning as "*a supportive learning environment in which learners can not only study and practice language but also to thrive as human beings*" (p. 2). Focusing on language learning Mynard and Shelton-Strong (2022) define self-access learning as "*language learning that takes place outside a formal language classroom with some kind of support*" (p. 2). In the scope of the present study, this last definition has been adopted as university students are typically required to do supported out-of-class work.

In this context, the current study presents the ways in which Budapest Business University provides self-directed and self-access learning opportunities in the scope of business skills development.

Developing soft skills at Budapest Business University

In this section, we aim to describe the practice and prove the effectiveness of offering self-access and self-directed learning opportunities at two Faculties of Budapest Business University. The two Faculties involved provide these learning opportunities in the framework of developing business skills, particularly certain soft and foreign language (L2) skills. Through the concrete examples, these instances demonstrate how self-access and self-directed learning empower students to take control of their learning experiences and how they tailor learning opportunities to their specific needs and interests.

Developing and Strengthening Business Skills

Peer collaboration in collaborative projects

Through peer cooperation, students are provided with occasions to engage with peers through group discussions and joint projects. Peer collaboration, and more precisely peer telecollaboration, has been a good practice at Budapest Business University's Faculty of International Management and Business for years (for an overview see Abruquah, et al.,

2016). The Virtual Exchange initiative, a recent endeavour, was jointly undertaken by three universities: Budapest Business University's Faculty of International Management and Business, Hungary, the University of Sfax, Tunisia; and Izmir Democracy University, Turkey, in 2023. The primary goal of the Virtual Exchange project was to offer students opportunities for intercultural and interactive growth by engaging in collaborative intercultural tasks. Additionally, the project aimed to furnish students with international intercultural exposure and wished to promote mutual understanding, global education, and digital literacy. Significant emphasis was placed on crafting shared activities that encouraged international students to communicate in ways that facilitated the acquisition of knowledge beyond what traditional sources like websites or books could provide. Students had control over their learning process, including setting goals, choosing resources, and deciding on the pace and methods of learning. The process allowed students to select topics for research, choose from different assignments or projects, or decide on the order in which they complete tasks. Self-directed learning was fostered through guided tasks that offered participating university students' choices within the tasks to promote their autonomy. Students were capable of monitoring and managing their own learning progress, identifying areas for improvement, and adjusting their strategies accordingly. In addition, students were encouraged to reflect on their progress and receive feedback throughout guided activities. Furthermore, all the students took responsibility for their own learning outcomes recognizing that they are ultimately accountable for their own success or failure. In the scope of the project, students were provided opportunities for self-assessment and peer feedback and were offered constructive guidance to help them improve.

Peer cooperation through creating an ESP portfolio

Portfolios may be a useful method of encouraging students to do self-access (Jabr, 2011). For facilitating the development of students' in-class cooperation skills through 2nd language learning activities, the Budapest Business University's Faculty of Finance and Accountancy has been using an English for Specific Purposes portfolio at some of its ESP language classes since the autumn semester of 2019/2020. Among others, the portfolio assignment contains graph analysis and case study tasks to be completed through cooperation in student pairs and teams. The graph analysis task requires student pairs to produce a 300-word-long written analysis of a graph related to one of the topic areas covered during the course. The analysis extends to the background of the graph's topic, as well as to trends, general details and future tendencies concerning the graph. The case study is completed in groups of four: students introduce and analyse a business-related problem awaiting solution and offer their recommendations in a 500-600-word-long written text. Students' self-direction in selecting graphs and cases for analysis and in researching and working with background and supporting materials matching their professional and linguistic abilities were vital for successful task definition, delineation and completion.

Also, organising students' own work greatly contributed to effective and efficient task completion. In the scope of quantitative research carried out in the autumn semester of

the 2019/2020 academic year to assess the usability of this portfolio method, participating university students' attitudes towards cooperation and the main predictors of their willingness to cooperate were assessed (Bánhegyi & Fajt 2020): the research measured students' willingness to cooperate, their mutual interdependence, communication skills, leadership skills, IT skills, time management, and professional knowledge. Overall, the findings indicate the importance of fostering a supportive learning environment for cooperative purposes, and have revealed that communication, leadership, IT skills, time management, and professional knowledge were important for successful student cooperation. Correlational and regression analyses also indicate significant relationships among various skills, with communication skills being a significant predictor of willingness to cooperate. It appears that, among others, self-direction contributed to task completion.

Autonomy, self-regulation, and independent learning through project-based learning

Engaging in project-based learning experiences are initiatives where individuals can take the lead to identify problems, explore solutions, and learn new skills in the process. This could involve creating a website, developing a marketing campaign, or conducting a scientific experiment outside of formal classroom settings. During the previously mentioned virtual exchange project run by Budapest Business University's Faculty of International Management and Business, the primary concept revolved around enabling students to develop a range of business-related proficiencies in connection with the language of media and communication.

On the one hand, students could enhance and practice certain hard skills within the framework of the course subject, thereby gaining a deeper understanding of the language of media and communication. Tasks included writing, and reading film reviews, crafting offers, designing print and screen advertisements, analysing market trends, and devising marketing communication strategies. On the other hand, students had the opportunity to develop their soft skills within teams, including teamwork, time management, active listening, flexibility, leadership, planning and organizing, strategic thinking, critical analysis, negotiating abilities, and various other skills. In this process, students took the initiative and responsibility for their own learning. And, instead of relying solely on traditional classroom instruction or guidance from a lecturer or mentor, self-directed learners proactively sought out resources, set goals, and managed their own learning experiences. This approach emphasized autonomy, self-regulation, and the ability to learn independently. Examining the effects of this self-directed approach, Török et al. (2019), on a sample of 58 students at the University's said Faculty, identified that project-based language education seems to effectively develop problem-solving skills.

Telecollaboration skills in an intercultural context

Students at Budapest Business University's Faculty of Finance and Accountancy have had the opportunity to participate in various forms of intercultural telecollaboration for quite a few semesters (Dósa, 2016; Dósa & Duda, 2016). A 2016 initiative involved 5 universities in 5 European countries with students working in mixed-nationality teams. Focusing

on a given popular concept of Hall's (1976) and Hofstede et al.'s (2010) cultural dimensions in each group, students produced intercultural-oriented introductory materials comparing and contrasting their countries along a selected aspect of popular culture.

This intercultural collaborative approach revealed some technical issues regarding coordinating schedules and using social media tools, as well as motivational challenges related to leadership and time management with reference to group activities. Still, based on a student satisfaction survey, the initiative proved favourable and a positive learning and skills development purpose experience for students (see Abruquah et al., 2016). Building on these findings, the Department of Languages for Finance and Management of Budapest Business University's Faculty of Finance and Accountancy has been offering some form of intercultural telecollaboration in each semester. In the scope of such projects students' self-directed efforts typically include 1) setting learning objectives through being immersed in an intercultural aspect of research by way of selecting their group projects' intercultural orientation, 2) identifying assessment criteria for the purpose of evaluating the use of relevant theories for presenting and characterising selected intercultural issues as well as 3) identifying resources for reaching project goals including identifying and finding appropriate theoretical resources, raw materials for their projects and designing their group work.

Skills for Life: Mentorship programme

Budapest Business University provides mentorship and support to university students through students' self-directed learning journeys, where mentors offer encouragement, guidance, and expertise, as well as assist mentees in overcoming challenges and attaining their learning objectives. BEE Mentorship Programme at Budapest Business University's Faculty of International Management and Business was launched in autumn 2022, following a thorough phase of planning and organisation (for an overview, see Horváth-Csikós et al., 2023). The Faculty offers foreign students the opportunity to join a student team, where they are assigned a mentor who provides help, motivation, and support during their university studies.

Within the framework of the BEE Mentorship Programme, the "Intercultural Roadshow" project provides interactive foreign university students taught English classes to Hungarian secondary schools. This project offers secondary school students the chance to practice English as a foreign language (EFL) and promotes cultural sensitization (with a positive social impact) among students by offering the opportunity to communicate with foreign students. Within the self-directed process, learners had the freedom and flexibility to decide what they wanted to learn, how they wanted to learn it, and when they wanted to learn. Students were proactive in seeking out learning opportunities and they actively identified their interests, needs, and gaps in knowledge or skills.

Individual learning accounts

Online learning platforms

Budapest Business University utilises online learning platforms and Open Educational Resources (OERs) such as Coursera to provide a broad spectrum of courses, tutorials, webinars, and interactive learning modules. These platforms enable learners to delve into topics of interest at their own pace and convenience. Online platforms facilitate self-assessed learning as they offer interactive quizzes and forms of assessments that learners can complete at their own pace.

Moreover, these assessments provide immediate feedback, allowing learners to gauge their understanding of the material and identify areas for improvement. Such online platforms enable students to concentrate their efforts and monitor their progress effectively, and also give them the opportunity to establish their own personal learning plans. In addition, when using these platforms, learners are encouraged to establish specific, measurable, achievable, relevant, and time-bound goals in their studies. This way, personalized learning plans are tailored to students' unique interests, strengths, weaknesses, and career aspirations and function as roadmaps for self-directed learning pursuits.

Problem-based learning

In addition, problem-based learning is used to introduce students to authentic, real-world business-related problems or scenarios demanding critical thinking, problem-solving, and decision-making skills. At Budapest Business University, problem-based learning is typically approached through case studies involving business partners, who provide or present real-life problems and situations from their own fields. In addition, case studies are also used to improve soft skills (Fajt, 2019).

Language skills for business

All students at Budapest Business University are to complete languages for specific purposes (LSP) courses and/or professional courses in a foreign language. Because of this, LSP is both a means of communicating about professional issues and an integral part of students' studies. Based on in-class instructor feedback on LSP preparedness and their own initiatives, students may decide to improve their knowledge of foreign language grammar. The University's Faculty of Finance and Accountancy provides an online Grammar Resource Pack in EFL. Students can set up specific learning objectives for themselves concerning grammatical structures, such as learning or practising certain grammatical structures they deem necessary at their level of EFL. The Resource Pack offers descriptions and explanations of grammatical structures and contains specific structure-related assessment tests. The Resource Pack thereby functions as a self-directed and self-access resource that helps students in identifying knowledge gaps and assessments for themselves as well as offers resources for reaching their learning goals.

Upskilling scientists of the future

Independent research

Many Budapest Business University's courses expect students to conduct independent research on topics of their interest. For this, students utilize scholarly articles, books, online

databases, and other resources to gather information and deepen their understanding of the topic in focus. In the scope of this activity, self-directed learning is realised through pair or group work tasks involving the following activities: setting academic learning objectives in line with the course, working with fellow students to assess the realisation of goals and to share feedback, as well as researching, critically evaluating and identifying resources for research.

In the scope of this longer-term project, students monitor and manage their own learning progress in the context of their contributing partner, identify areas of improvement for producing the best possible thesis, and adjust their strategies in the course of producing the research work. The latest development at the University is to introduce students the opportunity to write a bachelor-level thesis in pairs, which also promotes self-directed and self-access learning through creating a platform for academic dialogue between contributing students.

Academic Writing

Writing centres at other higher education institutions also play a pivotal role in nurturing students' academic writing skills. These centres provide specialized support and resources and help students from various disciplines to enhance their writing capabilities and to meet high standards of academic communication (see Delgado Alvarado, 2021; Hanford et al., 2021). Even though it is not a writing centre (yet), the University's recently introduced Academic and Argumentative Writing bachelor-level course also aids self-directed learning. Available at the University's Faculty of Finance and Accountancy, this general scholarly course helps students produce argumentatively and linguistically well-written academic pieces through self-directed goal-setting. At this course, students set genre-specific academic learning objectives, and while working with fellow students on research projects they constantly assess themselves and their fellow students against the academic norms of their fields and provide constructive feedback. At the same time, the course allows students to research, select, critically evaluate and identify scholarly resources for their purposes.

Concluding remarks

The evolving landscape of higher education necessitates a novel approach to preparing students for the complexities of the global job market. As part of this endeavour, the current paper has underscored the critical role of higher education in the development of self-access and self-directed learning through the development of critical business soft skills by introducing some innovative practices at Budapest Business University.

The integration of self-directed and self-access learning initiatives, coupled with an emphasis on soft skills development, reflects a holistic educational approach catering for demands of the 21st century workplace. By utilizing methodologies such as peer collaboration through collaborative projects and through creating an ESP portfolio, project-based learning, telecollaboration in intercultural contexts, a mentorship programme, online learning platforms, problem-based learning, language skills for business, and self-directed goal-setting in academic research, Budapest Business University exemplifies

how educational institutions can effectively prepare students for their future careers through self-directed and self-access learning.

The adoption of self-directed learning and self-access approaches within educational institutions often encounters various challenges and hurdles that can hinder their implementation and effectiveness. Future research could, therefore, aim to identify and understand these obstacles in the case of all stakeholders. Concerning this, research could provide a detailed analysis of the nature of these barriers across different educational contexts and offer strategies for overcoming them. This knowledge would be vital for enabling tertiary institutions to navigate the complexities of integrating self-access and self-directed learning into their curricula and could foster an educational environment that empowers students to take increased control of their own learning journey.

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Richard Fekete

SURSULAPITSCHI AND THE JOURNEY A CONTRIBUTION TO RESEARCH ON CHILDREN'S LITERATURE IN HUNGARY

Abstract
In the following brief reflection, I present some of the characteristics of current and recent Hungarian initiatives in children's literature, based on the institutional framework and internal literary dynamics. The aim is to give the reader a realistic picture of the current state of research in contemporary Hungarian children's literature. The paper focuses on the opportunities and challenges facing active and prospective researchers in children's literature. The text describes the impact of the political and literary regime change on the institutional system and research practices in children's literature; considers the reasons for counterproductive literary historical approaches, discusses the lack of methods of children's book criticism and psychology, and proposes some modest methodological suggestion for textual analysis. Despite all the difficulties, for example the legacy of the literary history and the the poorer literary output of the nineties, children's literature research in Hungary is moving in the right direction. So in this text particular attention is paid to the remarkable initiatives, projects and texts in children's literature especially of the last 15 years.

Keywords: children's literature, contemporary literature, Hungarian literature

Introduction

Jim and Luke (the engine driver), the protagonists of Michael Ende's wonderful novel *Jim and the Wild 13*, travel the sea in a steam locomotive. When they meet Sursulapitschi, the mermaid princess of the sea, and have to explain to her the workings of the mysterious steam locomotive, the following conversation takes place:

"– So, this meastoto… or leam mocostotive is something like a steamship, but it's used on land.

– It's a very apt phrase – Luke admitted with a cheerful snort – and quite accurate. You are very clever, my little lady.

The mermaid giggled again with satisfaction, then said:

– So this boat, which is not a boat at all, is a kind of boat! – she said, with a happy clap of her hands.

Marine creatures have a somewhat one-plane view of the world, you could say an aquatic perspective. And of course they are very disturbed if something is not fully understood from this aquatic perspective. But when they finally manage to 'aquafy' this incomprehensible thing, they are suddenly very relieved."

So, as a decent aquatic creature, Sursulapitschi has limited knowledge of how land-based vehicles work, but she is able to incorporate the steam locomotive into her own worldview. All she has to do is to find the conceptual similarities, distort a little in her lack of empirical knowledge, and relax. In the following brief reflection, I present some of the characteristics of current and recent Hungarian initiatives in children's literature, based on the institutional framework and internal literary dynamics. The focus will be primarily on the opportunities and challenges facing active and prospective researchers in children's literature. In some ways, the case of Sursulapitschi and the steam locomotive is particularly apt for the outline of institutions and discourse: the desire for change, the need to acquire new knowledge, and the act of "aquafying" are all characteristic of recent children's literature.

In Hungary, excellent initiatives in children's literature have emerged in the last decade and a half, but the reflection – or the systematic research – of children's literature still has debts. In my opinion, this is mainly due to the fact that during the regime change in literature that accompanied the political regime change, rather little attention was paid to children's literature.[1] Around the time of the regime change, with the so-called "literary theory boom", several reading strategies that treated biographical (but mostly Marxist) interpretation with suspicion entered the country. Since most of the researchers working on children's literature in the 1990s reflexively applied previously entrenched patterns of reception (and were not really interested in new approaches), children's literature, to put it bluntly, could not really develop a literary theory.

Children's Literature after the Regime Change

Another consequence of the change in the public sphere – that came with the regime change – was that the new topics and the use of more colourful literary discourses had such a liberating effect on the writers who had become well-known that they (again, to put it bluntly) had little thought of writing children's literature. In the case of children's literature, the fact that the regulation of the literary public sphere under socialism – as Géza Arday has pointed out – affected children's literature much less than so-called adult literature further highlights the issue (Arday, 2013). It is no coincidence that the 1990s seem to be a kind of blind spot when taking into account the major achievements of children's literature after the regime change.

Of the most important authors of children's prose, Ervin Lázár wrote his most influential works essentially up to 1985, including *The Square Around Forest* (*A Négyszögletű Kerek Erdő*) – only *The Elf Factory* (*A manógyár*) stands out from his output of the nineties. The situation for Éva Janikovszky is similar. Of her books after the regime change, only *Cvikkedli* (*Czvikkedli*) is inherently one of the best-known of her oeuvre. Nor is the decade after the fall of communism is the peak of Pál Békés's oeuvre in children's literature. As a masterpiece comparable to *The Clumsy Wizard* (*A kétbalkezes varázsló* – 1984) and *The Wise Gap-Filler* (*Bölcs Hiánypótló* – 2005), the most that can be mentioned is *The Half-Life*

[1] With the regime change in Hungary in 1989, the communist system collapsed and Hungary became a democratic state with the multi-party system and free elections.

(*Félőlény*) from 1991. The cream of Ágnes Bálint's and István Csukás's oeuvre of children's prose was also clearly written before 1989, as was Magda Szabó's. After the turn of the 2000s, however, the production of quality children's prose definitely took off. In addition to Pál Békés's aforementioned work, the first three volumes of Judit Berg's *Rumini* (*Rumini*) were published between 2000 and 2010, along with the already mentioned work by Pál Békés, the *Prince of the Suromberk* (*Szuromberek királyfi*) by Ferenc Szijj, László Darvasi's *Trapiti* (*Trapiti*) novels, Gergely Péterfy's *The Book of Misi* (*Misikönyv*), János Lackfi's *Lajos Kövér* volumes, *Csoda és Kósza* (*Wonder and Stray*) by Zoltán Czigány, and László Bagossy's bestselling book of fables, *The Dark-Seeing Fairy* (*A Sötétben Látó Tündér*) (Gombos, 2011).

The situation is very similar in children's poetry. In the nineties, few of the canonical authors of what we would call modern Hungarian children's poetry were still alive: the best-known authors were István Kormos, Zoltán Zelk and Károly Tamkó Sirató, who died at the turn of the seventies and eighties, and Sándor Weöres as well as Ágnes Nagy Nemes around the time of the fall of communism. From the 2000s onwards, however, a series of more important books appeared, ranging from *Fresh Ink (Friss Tinta),* which sometimes had genre and age mismatches, to *Golden Cap* (*Aranysityak*) and autonomous, single-verse children's poetry books. To name just a few examples: *Mario the Star Picker* (*Csillagszedő Márió*) by Ottó Kiss, Dániel Varró's *Over the Smear-Mountain* (*Túl a Maszat-hegyen*), Krisztina Tóth's *Animal Stories* (*Állatságok*), János Lackfi's *The Silly Adult* (*A buta felnőtt*), András Ferenc Kovács's The *Edge of the Dawn Star* (*Hajnali csillag peremén*), Péter Kántor's *Two Hundred Steps Up and Down* (*Kétszáz lépcső föl és alá*), or, more recently Árpád Kollár's *What Bird* (*Milyen madár*) and József Keresztesi's *What Eats the What?* (*Mit eszik a micsoda?*) have all been able to touch on the tradition of children's poetry in a productive way. The quality of children's poetry in the 1990s is similar to that of children's prose: there are few children's poetry collections worth mentioning.

After the turn of the millenium children's literature, simply put, began to catch up with itself. On the one hand, the quality of texts has improved and, on the other hand, the institutional system has begun to develop. In the middle of the first decade of the 2000s, *Csodaceruza* was created to fill the gap in the magazine culture, and the most popular children's publishers, with the exception of Móra, were established between 2001 and 2012: in chronological order, Pagony, Csimota, Manó Könyvek, Naphegy, Vivandra, Betűtészta, Cerkabella and Kolibri, as part of the Libri Group. The list also shows that the situation is much more promising from a publishing point of view than for magazines, helped by the fact that illustrators and, with them, children's publishers have updated the visual appearance of books, partly as a result of the Bologna Book Fair 2006. In sum, the years following the regime change brought a sudden rush of free competition into the literature industry, which took a decade and a half to recover from, but it is also true that the recovery can best be described as the beginning of quality work (and the development of the book market).

Hungarian children's literature is still lacking several important segments: children's book criticism and illustration criticism have not been developed, there is a general lack of basic research, and there is still a great need for a forum that systematically deals with

children's literature research. Over the last decade and a half, such platforms have been created for longer or shorter periods, but unfortunately they have not been long-lived. Thus, the institutional changes that accompanied the regime change did not result in the kind of institutional system that would have been needed for systematic and methodical work. Csilla Sándor, in her plan for the later Hungarian Institute of Children's Literature in 2014, impressively summarized why an autonomous institutional system could be useful. (Sándor, 2010) While some of the works that claim to be summaries have taken stock of the major institutions of children's literature, it seems to be a matter of attitude whether all the functioning institutions are presented as the beginning of a hopeful story (Ruppl, 2012) or as the heroic attempts of a profession in continuous crisis.

At present, apart from the publishing activity and the excellent "Children's and Youth Literature" course at the Károli Gáspár University of the Reformed Church in Hungary, the aforementioned Institute Hungarian of Children's Literature, and the Centre for Youth and Children's Literature (Ifjúsági és Gyermekirodalmi Centrum) represent the highest institutional standards, and Hungarian Board on Books for Young People, National Educational Library and Museum (Országos Pedagógiai Könyvtár és Múzeum), Hungarian Reading Association (Magyar Olvasástársaság) and applied fairy tale research – most notably the Folk Tale Treasury (Népmesekincstár) project and Metamorphoses Fairy Tale Therapy Association (Metamorphoses Meseterápia Egyesület) – are important complementary activities. The public background of IGYIC and its systematic and conceptual development over the last 3-4 years give reason for great hope: the Csimborasszó (Csimborasszó) project promotes children's literature by setting contemporary children's poems to music; the Mesecentrum (Fairy Tale Centre) online magazine publishes noteworthy studies, essays and reviews; the Vadlazac (Wild Salmon) workshop, developed in collaboration with the Hungarian Board on Books for Young People, Mónika Luzsányi Miklya and Mária Bajzáth, disseminates contemporary children's literature through experiential, all-arts teaching methods. In addition to the programmes that provide continuity, occasional events have a major impact on children's literature. The Budapest Illustration Festival and the International Book Festival are of a high standard, and the first Children's Literature Session in the Humanities Section of the Spring 2021 National Scientific Students' Associations Conference was a highlight for the academic sphere.

Legacy of the "Literary History"

The initiatives listed above are promising from the researcher's point of view, but from a disciplinary point of view, the "literary history" legacy of the research on children's literature in the 1990s is an additional difficulty. To illustrate why I have put the term "literary history" in quotation marks, I will give a symptomatic example: the available literature on modern Hungarian children's literature tends to divide it into three phases from the early 1950s to the regime change. The reference point is *Gyermekirodalom (Children's Literature*), edited by Gabriella Komáromi and written by several others around the turn of the millennium, which both provides an accurate account of the decades of children's literature before the regime change and also shows the reasons for the doubts

about the literature. The author of the relevant chapter, Béla Rigó, identifies the qualitatively paradoxical 1950s as the first important decade of modern Hungarian children's poetry, when poets (Ágnes Nemes Nagy, István Kormos) who were on the forced path of children's literature due to the censorship of the Rákosi era were already creating (the first *Vackor* volume, for example, was published in 1956), and when children's literature, which carried communist ideology, was also still in its fertile period. Rigó places the second phase between the 1960s and 1980s, which I believe he rightly identifies as the peak of the history of Hungarian children's poetry, mainly because of the quality of the works of Ágnes Nagy Nemes, Sándor Weöres, Zoltán Zelk and István Kormos, and the leniency of cultural policy. The period between the 1980s and the fall of communism is interpreted by the author as a period of decline, the only contribution of the decade being the infiltration of Swedish children's poetry, as Béla Rigó mentions (Rigó, 2001).

There is certainly a problem with the above passage. I think the author has done a correct job of drawing and judging the context of children's poetry. To quote Ágnes Nemes Nagy, in the second period mentioned by Béla Rigó, the prestige value (i.e. recognition) and self-worth of poetry could indeed meet because authors who were outstandingly talented wrote children's poems (Nemes Nagy, 1981). The narrative style of these forty years, however, reveals a symptomatic phenomenon. The simplifications that arise from the mode of existence of chronological literary history narratives (the highlighting-disclosure dichotomy, the need to form a canon, the treatment of time, conceptualization, etc.) are very difficult to avoid (if they can be avoided at all), so I would not dwell on them. However, the argument and the specific textual examples raise a different kind of problem. On the one hand, it seems that Béla Rigó's narrative is strongly determined by the reception of the poets. Since there are not many critical texts on their children's poetry (and what is available is not very high quality), reflections on their adult poetry come to the fore. For example, in discussing the children's poetry of Ágnes Nemes Nagy, Rigó writes about the "object poetry" that dominates the reception of the poet's lyrical oeuvre, which is difficult to justify in the case of children's poems (Rigó, 2001). In addition to the dysfunctional use of reception, the narrative of modern Hungarian children's poetry becomes problematic because of the excessive adulation it receives. For example, in his analysis of Zelk's children's poems, the treatise emphasizes the imagery, while the poet's – sometimes truly sumptuous – text organization is exemplified in the *Seagull*, which has nothing to do with children's poetry except that it is written in an even rhymed quaver (i.e. in the popular form of a children's verse) (Rigó, 2001). The *Seagull* is one of the most serious poems of mourning in Hungarian poetry, a traumatic narrative of the loss of a spouse, a grand poem of 82 four-line strophe written with manic repetitive rhetoric and strong emotion. Not a poem for children.

The above is not at all an attempt to invalidate the narrative of children's literature of the period (especially since I deeply agree with the basic thesis of the 60s-80s). However, in the last ten years, since I have been teaching children's literature to future teachers at the teacher training college in Szekszárd and Veszprém, I have been encountering similar phenomena. The impact of the book goes beyond my personal experience. It is an important text for the course syllabus of the largest educational institutions in Budapest,

Eötvös Lóránd University, Pázmány Péter Catholic University and Károli Gáspár Reformed University and it is the basis for the synthesized textbooks on children's literature. In keeping with the tradition of Hungarian teacher training, such volumes mostly function as college (now more like university, due to changes in the institutional structure) notes by authors who teach children's literature anyway. The available notes generally function by adopting (at most nuancing) the basic premises of the volume from 1999, or expanding them in part, according to the authors' research interests. For example, the 2013 book by József Bárdos and László Galuska (*Chapters from Children's Literature*) contains very fair fantasy chapters and a recommendation for reading for the age of the author based on the concept of the fairy tale novel described in detail by the authors (Bárdos & Galuska, 2013). Nevertheless, their work is also organized by the genre-theoretical and author-principled approach, which is not at all a problem, but is not very exciting in the light of the other notes.

The practical consequence of this kind of anomaly is that in university courses, lecturers either recite what is written in the synthesized texts or try to revise it according to their own tastes and preferences. The latter solution has at least the advantage of reinforcing the classical humanities competence of critical thinking in students, but the presentation of textual discourses cannot support this kind of thinking, because there is simply no literature that can be argued with each other on the merits. Of course, how could they be in a context where a self-reflexive literary theory could not even develop?

The question, it seems to me, goes even further. On the one hand, it raises the question of whether it is even worth doing literary history under such conditions, or more precisely: is it possible to write a good literary history without a well-defined conceptual and methodological (essentially literary theoretical) framework? The question is easy to answer, of course, but it seems much more important to note that this kind of methodological approach is only exceptionally in demand among researchers: texts on literature in the strict sense, with a fair theoretical basis, can be found in the works of Anna Kérchy, József Lapis, Andrea Lovász and Hermina Gesztelyi. This does not mean, of course, that there are not excellent researchers and excellent books, from Zoltán Hermann to Gabriella Petres and Zoltán Pompor, but theoretical methodological rigour – which can provide a model through critical treatment of one's own literary theoretical preconceptions – is less typical (in this respect, the work of Emőke Varga and Emese Révész is welcome in illustration theory).

Institutionalism and the frustration of scientific theory that goes hand in hand with a lack of systematicity also act as a barrier. Anyone who has been to a conference on children's literature have seen that it is not just a compulsory cliché, but a general researcher's public mood. For my part, I see the existing attempts to write the history of children's literature in terms of genre and authorship as simply a compulsion to conform due to a minority complex (Zoltán Pompor's book on Ervin Lázár is the most serious exception on a monographic basis). These narratives operate by the same mechanisms as, for example, the old academic literary history, but they are much more summarized, less detailed and have proportionally much more associations. The inferiority complex is also evident in the oral discourses, and the compulsion to conform is obvious in the use of

narratives similar to (and indeed unreflective of) the grand narratives of, for want of a better term, adult literature.

A Specific Set of Criteria

When dealing with children's literature, it seems appropriate to develop a specific set of criteria. Most of the basic texts dealing with children's literature and the functioning of children's and youth literature already report on fundamental problems at the conceptual level, from the definition of "child" to the conflation or even separation of "children's and youth literature" (Arday, 2013). Komáromi's definition in *Children's Literature*, for example, refers to literature that is part of national literature; that is applied literature with specific themes and structure but without its own means; and of which the child is the recipient and consumer (Komáromi, 2001). The definition raises several problems. Many adults read children's literature for pleasure (or even as a result of parental practice), and there are many works of children's literature written for adults which contain quasi-instructions for use. From a structural point of view, I do not see much difference between the possibilities of a work written for children and a work not written for children. The basic criteria for *good* children's literature, for example, are very often unworkable. When it comes to describing a *good* children's poem, it is safe to say that the "barely rhymed" (Lengyel, 1988, p. 181) Lóci-poems of Lőrinc Szabó do not at all correspond to the criteria of aestheticism, and Ottó Kiss's Swedish children's poems do not even so much (and in many cases they remain conceptually without visual representation), but the didacticism of István Kormos*'s Vackor* series cannot be called a model characteristic either (not to mention the nonsense poetry). In the end, it is just that children's literature cannot really be separated from non-children's literature by a purely literary approach. The conclusion may therefore be that it is a kind of applied literature, as in the case of bibliotherapy (it is hardly by chance that fairy tale therapy has become the focus of children's literature). In this light, the assertion of a literary-historical approach seems even more paradoxical.

József Keresztesi's famous article on Eva Janikovszky, which started as a review, already in 2011, seriously addressed the problem. According to his two closely interconnected premises, children's literary criticism could only function legitimately if it had its own critical language, and if this language was created not only with the help of literary theory but also with the tools of psychology. *"For children, art is not primarily a cultural but a psychological fact. The complex network of values and concepts that make up the fabric of culture is not yet a given for them, and therefore the work of art is not intended to place it in this network, or to enrich it. Critical practice must take account of the fact that when we speak of children's literature we must take account not only of the poetics of the literary text, but also of a very specific psychological mechanism of action."* (Keresztesi, 2011, p. 13). A similar conclusion is reached by Sándor Vojtek, who, in his essay on *Rumini,* entitled *Is it possible to interpret children's literature?*, distinguishes children's literature from literature for non-children on the basis of two aspects. The first claim is that texts for children cannot really be interpreted in more than one way, while the second claim emphasizes that children's literature is intended to be not only entertaining but also emphatically useful, i.e. to educate (Vojtek, 2012). Both claims reinforce the psychological

approach defined by Keresztesi. Receptive perception (often referred to as child perception), which favours a polarized world order, favours definite, univocal interpretations over sophisticated explanations. The limitation of interpretations to the field of literary aesthetics or even literary history creates narrow interpretative frameworks (not to mention that monodisciplinarity, with welcome exceptions, is still a basic tenet of literary studies). The *useful and entertaining* conception of literature in the case of children's literature really means that, in a good case, the basic concepts of linguistic formality, genre relations and, for example, focalization are reflected in the critical text, while the basic concepts of sensuality and identification – psychological – are deeply embedded in the impact of children's literature texts. The reception mode guided by sensory functions was most recently applied by József Lapis in his enumeration of the poetic possibilities of contemporary Hungarian children's poetry (Lapis, 2021), while the issue of identification – whether in the tools of narrative psychology or reception aesthetics – has so far been less addressed by scholars. Of course, the toolbox of cultural studies also holds other possibilities, from media studies to neo-historicism, as Artemis Harmath pointed out at the end of 2021 (Harmath, 2021).

Despite all the difficulties, research on children's literature in Hungary is making progress. As far as I can see, there is less and less "aqufying", while the adaptation of international research trends has begun. That said, there are many mysterious *craft* plying the seas of children's literature that can confuse researchers, but I am convinced that learning about and especially applying new technologies (methods, if you like) is shaping Sursulapitschi's perception of research, along with her attitude – and that this makes for a much more exciting journey than before.

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Ágnes Baros-Tóth

EMERGENCE OF THE RESOURCE-BASED VIEW (RBV) AND ITS IMPACT ON FAMILY BUSINESS RESEARCH – LITERATURE REVIEW

Abstract

The emergence of the resource-based view (RBV) has changed the understanding of how companies grow and shifted the focus of examination from the firm's external factors to the internal ones, more specifically to the company's resources so that the divergent developmental route of companies could be explained. The fundamental assumption of RBV is that companies have different resources. If these resources are valuable, rare, inimitable, and non-substitutable (VRIN), they represent a lasting competitive advantage for the company.

This study aims to discuss the literature review results to encapsulate the evolution of the resource-based view, its impact on family business research and theories, and its novel contributions to this field.

RBV has been incorporated in family business research with the premise that family firms are thought to have resources that differ from those of their non-family counterparts because the family itself is considered a VRIN resource, through which the company can gain a competitive advantage and achieve higher organizational performance. A family business's unique bundle of resources is called "familiness", a concept that has stood the test of time as it is still used even in recent research as a reference point. Familiness has also contributed to the emergence of other concepts such as the socio-emotional wealth.

Keywords: resource-based view; family business; familiness

Introduction

Researchers have long wondered what may be behind the phenomenon where companies operating under similar conditions in the same industry exhibit completely different growth rates and development trajectories. As early as 1959, Edith Penrose suggested that possible explanations should be sought internally, within the company, and not necessarily in a market-based approach (Penrose, 1959, 2009). As a result of this line of thinking, the resource-based view emerged several decades later. The significance of its evolution was that it took a completely different approach to examining the performance and growth of companies and explaining the observed deviations. In the past, external factors such as industry characteristics were typically seen as drivers of competition (Porter, 1980). In contrast, the resource-based approach argues that if companies operate in the same industry under similar circumstances, there must be some other factors that can significantly influence the divergent development of these

companies. Wernerfelt (1984) directed attention to factors within the company, which he called resources, whereby, he believed, a company could achieve high performance. Building in part on Wernerfelt's ideas, Barney (1991) developed the resource-based view in detail, arguing that the most important source of competitive advantage for companies is their internal strengths (resources and capabilities). According to him, companies have different resources, and if these resources are valuable, rare, inimitable, and non-substitutable, they can result in a sustained competitive advantage for the company.

RBV became an important part of family business research soon after its appearance. The assumption was that the resources of family firms differed from those of their non-family counterparts, as the entrepreneurial family could be regarded as an inimitable and non-substitutable resource. This standpoint has inspired various RBV-related models and theories within family business research.

The current study, based on literature research, is aimed at answering the following questions: What are the antecedents of the resource-based view; what impact did it have on the family business research; how was it incorporated into various family business theories, and what novelties did it bring in this field?

My research is based on the processing of the most important relevant literature. First, the antecedents leading to the development of the resource-based view are presented, and then the most important findings of the theory are summarized. There is a huge literature on this topic, so this study is limited to the most defining milestones of the relevant research. The second part examines how the resource-based view emerged in family business research and the new approaches it has led to.

The emergence of the resource-based view (RBV)

The importance of the resource-based view in family business research is comparable to that of the agent theory (Baros-Tóth & Rácz-Putzer, 2023). Within the study of family businesses, the resource-based view is one of the dominant theories used in research in many areas (entrepreneurship research, organizational social capital, corporate governance, succession, wealth creation, organizational culture, etc.) (Rau, 2014). The assumption is that family businesses have unique resources, which means the "familiness" of the company (Sirmon & Hitt, 2003; Málovics & Farkas, 2016). Habbershon and Williams (1999) coined the concept of familiness, which refers to a pool of resources created by interactions between family and business.

The novelty of the resource-based view, when it emerged, was that it shifted the focus from a market-based approach to the company, trying to explain the different performance of companies and why some businesses develop and grow while others are unable to do so under similar market conditions (Penrose, 2009; Rau, 2014). In the history of management theory, the resource-based view has become one of the most significant and cited theories. Since its publication, there has been debate about how much the quality of a company's resources and the company's capabilities through which resources result in a competitive advantage can have an impact on the implementation of a successful corporate strategy (Felsmann et al., 2022).

The resource-based view can be traced back to the claims made by Edith Penrose in her 1959 book, The Theory of the Growth of the Firm (Penrose, 2009). The influence of the principles and concepts developed in this book is increasingly significant in resource-, knowledge- and capability-based approaches to corporate strategy. Penrose's theory of corporate growth is also key to strategic human resource management. It is also of great importance in interpreting a company's characteristics and the capabilities that enable it to create value (Pitelis & Penrose, 2009).

Pitelis and Penrose (2009) define a company as a set of production resources (production factors) under managerial coordination that produces products and/or provides services to obtain profit through market sales. It also states that human resources, especially managerial resources, are the most important among the company's resources. There are two conditions for corporate growth: external causes, such as demand, and internal growth incentives and constraints. According to her, there are two reasons why endogenous growth incentives can be identified from the company's point of view. The first one is that completing any plan requires resources beyond those essentially needed to implement it. The other reason is that once the plan is achieved, leadership resources are freed up (Pitelis & Penrose, 2009).

Resources provide a variety of services. The heterogeneity of services due to resources is what makes each company special. Human resources, especially managerial resources, are crucial because growth requires planning, and managerial resources capable of planning are company-specific resources and not available on the market. A company is not defined by its products, but by its resources, therefore diversification is fundamental to corporate growth (Pitelis & Penrose, 2009).

Wernerfelt published a study that initiated the resource-based view in 1984 under the title 'A Resource-based View of the Firm' (Wernerfelt, 1984). According to his definition, which subsequently received much criticism, "*Resources can be understood as anything that can be considered a strength or weakness of a particular firm, and the resources of an enterprise at a given time could be defined as those assets (tangible and intangible) that are semi-permanently tied to the enterprise*" (Wernerfelt, 1984, p. 172). In his study, he introduces the concept of constraint resulting from the resource position, which can be attributed to the existing different allocation of resources among market participants (Felsmann et al., 2022). This introduces a novel approach in contrast to the industry structure-based approach developed by Porter (1980), an essential element of which is the concept of market entry barriers (Tari, 2019). While Wernerfelt (1984) sees internal resources as the determining factors that lead to high returns in the long run, Porter (1980) considers industry characteristics outside the company as the driving forces of competition.

Wernerfelt's (1984) study was followed by articles and studies by other researchers that contributed to the development of the resource-based view. Another influential study was Barney's article, Firm Resources and Sustained Competitive Advantage, published in 1991 (Barney, 1991). The statements made in this article are the cornerstones of the development of the resource-based view. At the time when the article was pub-

lished, the use of the resource-based view could only be seen in a relatively small number of literature publications. The significance of Barney's article is that it can be considered the first formalization of published studies on the topic that formulated a comprehensive, empirically testable theoretical framework for establishing the resource-based view (Rau, 2014). It also shows the significant impact it has had on researchers' work on the topic. As of 2024, the article has been cited more than 102,000 times, according to Google Scholar. According to Barney (1991), one of the key areas of strategic management research is understanding and exploring what resources can achieve lasting competitive advantage. Companies can achieve this competitive advantage by exploiting their internal strengths (resources and capabilities) by responding to environmental opportunities (Barney, 1991). The resource-based view examines the consequences of two assumptions. The first is that companies within a given industry can be considered heterogeneous based on their strategic resources. The second is that these resources are not perfectly mobile between companies, thus heterogeneity can persist in the long run (Barney, 1991).

Barney (1991) divides resources into three categories: physical capital resources, human capital resources, and organizational capital resources. The first group includes the physical technology used by the company, the company's plant(s) and equipment, geographical location, and access to raw materials. Human capital refers to the qualifications, experience, intelligence, networks, and expertise of the company's managers and employees. Organizational capital resources consist of the company's formal reporting structure, formal and informal planning processes, controlling and coordination systems, and informal relationships between groups within the company and between the company and its environment. According to his definition, "*firm resources include all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc., controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness. Firm resources are strengths that firms can use to conceive of and implement their strategies*" (Barney, 1991, p. 101). Today, the resource-based view is one of the most respected theories for describing and interpreting organizational relationships (Barney et al., 2011). Barney's (1991) seminal observation is that companies have different resources and that if these resources are valuable, rare, inimitable, and non-substitutable, they represent a lasting competitive advantage for the company. This is the VRIN model, with an abbreviation formed from the initials of resource indicators. In the period since the publication of the article, however, the theoretical findings outlined by Barney have not only gained followers, but several scholars have precisely criticized the concept of competitive advantage based on resources (Kraaijenbrink et al., 2010; Le Breton-Miller et al., 2015; Kellermanns et al., 2016).

One important suggestion about RBV earlier was that Barney (1991) omitted time as a factor when outlining the theory, i.e. when RBV was launched, he did not specify how long the competitive advantage would have to last to provide a lasting or sustainable competitive advantage for the company (Felsmann et al., 2022). In response to

this critical remark, Barney et al. (2021) argue that a sustainable competitive advantage occurs when other firms find it difficult to produce the same level of economic value as that company in the long run. Although it remains undefined what they consider as a long-term duration.

Another important criticism from scholars dealing with the topic is that the claim that the most important criterion for lasting competitive advantage is the existence of valuable, rare, inimitable, and non-substitutable resources and abilities (VRIN) within an organization is not sufficiently supported by empirical research (Rau, 2014). Doubts may arise that "*virtually anything related to a firm can be a resource*" (Priem & Butler, 2001, p. 32), since there are also resource categories that, unlike resources that can be measured from an operational point of view, are difficult to measure and grasp.

The authors cite tacit knowledge as an example, which is "*personal and non-transferable or partially transferable knowledge*" (Chikán, 2020). Tacit knowledge consists partly of innate abilities and partly is formed through experience, socialization, and learning processes, people carry it within themselves. One of its essential characteristics is that it cannot be taught to others, so it can be considered a person-specific trait (Chikán, 2020). This distinguishing feature partly explains why several researchers attach paramount importance to it for lasting competitive advantage (Priem & Butler, 2001).

Kraaijenbrink et al. (2010) suggest that it would be worth returning to Penrose's roots (Penrose, 1959, 2009) and examining what role managerial skills can play in building sustained competitive advantage within a company. They base their views on Grant's (1996) suggestion that lasting competitive advantage is not solely due to resources but is generated by the leadership skills needed to integrate these resources. A further observation on sustainable competitive advantage is that a lasting competitive advantage cannot be maintained in the current turbulent, rapidly changing external environment. Instead, achieving a temporary competitive advantage seems to be a more realistic goal (Balatoni, 2019).

To broaden the framework of the resource-based view, the future direction of research could be synergy between RBV and other theories. Such interactions can arise concerning numerous theories, including the organization theory (Davis & DeWitt, 2021), network theory (Burt & Soda, 2021), learning theory (Greve, 2021), and stakeholder theory (McGahan, 2021). An alternative approach would focus on opportunities to enhance content knowledge using the resource-based view. One important area is human resource management, which not only improves our understanding of how performance behavior types and outcomes establish relationships between resources and competitive advantage but also deepens our understanding of the nature of human capital resources (Ployhart, 2021).

The resource-based view in family business research

The resource-based view plays an important role in family business research. There is an opinion that the resources of family businesses are differ from those of non-family businesses, because the family itself is considered a resource, which is valuable, rare,

inimitable, and non-substitutable, whereby the company gains a competitive advantage (Rau, 2014) and achieves higher organizational performance (Habbershon et al., 2003). This distinct bundle of resources is what Habbershon and Williams (1999) call familiness, a set of specific resources and abilities that arise from the interaction between family and business and are the basis for wealth creation.

Habbershon and Williams (1999) were the first to apply the resource-based theory to family business research on the grounds that a resource-based view of a firm is the one that can explain the sources of competitive advantage in family-run businesses. According to them, family businesses are complex, dynamic organizations with diverse intangible resources. Many of the family businesses' special advantages are due to the family and the organizational processes within the business, which is why the authors believe that RBV can be a suitable framework for understanding the competitive advantage of family businesses. By their definition, the resource-based view assumes that firms are heterogeneous and that the combination of unique, permanent, non-substitutable, and sometimes intangible resources in the business provides opportunities for the firm to achieve competitive advantage and excellent performance (Habbershon & Williams, 1999, p. 7). The total of the resources of family businesses was given the name familiness. It is the unique combination of resources that a company has. This bundle of resources is formed due to the system's interaction between the family, the organizational members, and the business. The authors believe that this definition creates a unified systemic approach to the performance, capabilities, and competitive advantage of family businesses (Habbershon & Williams, 1999).

Habbershon et al. (2003) expanded on the concept outlined in their previous study by further developing a unified system model of the performance of family businesses and establishing a clearer relationship between individual family members, the family unit, and the family business. In their view, the distinctive familiness can lead to family-based benefits, through which entrepreneurial families can achieve the goal of transgenerational wealth creation (Chrisman et al., 2010), which is a defining function of the family business system and can explain why family firms exist from an economic point of view. Habbershon et al. (2003) developed a systemic approach to the resource-based view of family businesses and highlighted that systemic synergies can exist between family and business.

Cabrera-Suárez et al. (2001) applied a resource-based view of family business research from a different perspective. They sought to develop an integrative model of knowledge transfer and successor development within family businesses using the resource-based view and the knowledge-based approach. If the distinctive tacit qualities (such as commitment, trust, reputation, and know-how) present in the family business can be passed on to the next generation, this can increase the likelihood of the business's continued survival and growth of the business. According to the authors, this may also help us better understand how succession works in family businesses because the performance of newer-generation companies tends to decrease rather than increase. Therefore, they believe that it is important to consider factors that may

influence the effectiveness of succession and how the knowledge transfer process between the current owner and the successor should be managed (Chrisman et al., 2010).

The model developed by Sirmon and Hitt (2003), which starts from the resource-based view (RBV), played a major role in integrating the RBV with family business research. Their aim was to examine the special resources within a family business (human capital, social capital, patient capital, survivability capital, and governance structure characteristics) and the impact of resource management that together can lead to competitive advantage and wealth creation for the company. The resources listed are those that distinguish family businesses from non-family businesses. Based on their analysis, they identified three factors of resource management that are of decisive importance: resource inventory, the creation of resource bundles, and their exploitation. They also looked at why the performance of certain companies is better than that of others. Resources alone are not enough to achieve this; they must also be properly managed so that they can produce value (Sirmon & Hitt, 2003).

Entrepreneurship, the desire for the company to grow and create wealth is a factor that characterizes family businesses. Sirmon and Hitt (2003) focused on family businesses characterized by entrepreneurship and high performance. Based on their analysis, they found that these family businesses prioritize their goals and that familiness takes precedence over other objectives in the process. Another characteristic feature is that they do not "dilute" family property so that they can finance the growth of their firm and the process of wealth creation. This means that they are reluctant to use investors outside their families, try to rely on the resources generated by the company, or are willing to take out bank loans to finance growth. Another interesting fact is that they adhere less to tradition, they do not shy away from using unusual, unconventional means so that they can preserve both family identity and the process of wealth creation. Owners of this type of family business are even willing to skip the next generation in the succession process or ignore birth order, employ professional management, or choose successors from their in-laws so that they can protect the company's family identity while maintaining the wealth creation process (Sirmon & Hitt, 2003).

The first element of the model, resource inventory, consists of three phases. The first phase is resource evaluation, which strengthens the manager's knowledge of the company's resources. The next stage is resource shedding, that is, the liquidation of resources that are worthless to the company. While resource accumulation is key for companies, in many cases the opportunity cost of maintaining and using minor resources does not contribute to wealth creation, but can even reduce wealth, so it may be more worthwhile for the company to shed some of its resources. This is not an easy process, especially in family businesses, where such downsizing can mean breaking emotional ties. The third stage is resource expansion to enable the enterprise to develop valuable, rare, hard-to-imitate, and non-substitutable sets of resources that can contribute to the implementation of the strategy. The second element of the model is the creation of resource bundles, and the third element is the exploitation of resources since the mere existence of resources within the company does not guarantee the

achievement of competitive advantage and thus the success of wealth creation. It is therefore necessary to develop the right combination of resources and then use them to gain a competitive advantage. Empirical studies show that it is not necessarily companies with resource abundance that can achieve lasting competitive advantages, but in certain cases competitors with fewer resources, because the latter are forced to use resources more efficiently (Sirmon & Hitt, 2003).

Carney (2005), who approached the problem from an organizational theoretical point of view, tries to find an answer to the question of family businesses' competitive advantage from a different starting point, by identifying factors that can give family businesses a competitive advantage. Starting from the assumption that the company's value creation activity depends on its governance system, he identifies three characteristic capabilities, termed the 3P model: parsimony, personalism, and particularism. By parsimony, he means that if incentives are aligned, they can have a twofold effect, because on the one hand, they can reduce agency costs and, on the other hand, they can contribute to better efficiency (Carney, 2005). Personalism (person-centeredness) allows the values and visions of the family to be reflected in the business, since the person of the owner-manager, who is also a member of the entrepreneurial family, embodies authority in the firm. Particularism (the division of unity into parts) allows greater freedom in the exercise of authority, enabling it to override rational-calculative decisions. An example of this can be hiring a non-family manager (Carney, 2005). The 3P model describing successful family businesses can contribute to understanding whether and how joint ownership and control can result in additional rents for the company from resource ownership (Rau, 2014).

Another factor was included in the analysis of familiness by the empirical study of Tokarczyk et al. (2007). The authors tried to find out what role familiness can play in the market orientation of the family business, which is a significant factor in achieving competitive advantage. According to them, market orientation can be linked to corporate culture and can derive from the internal essence of the company rather than its strategy. It can even be identified as a link between organizational culture and business strategy. The result of their qualitative empirical analysis is that the characteristics of familiness together form a capability within the enterprise that can contribute to the effective implementation of market orientation. The resources involved and their characteristics determine the strategic focus of the business, its customer orientation, family relationships, and operational efficiency. They conclude that familiness can play a significant and positive role in the long-term financial success of family businesses (Tokarczyk et al., 2007).

Le Breton Miller and Miller (2006) investigated the factors contributing to the longevity of family businesses and how they relate to the firm's resources. They assumed that there were types of family businesses capable of developing distinctive core competencies. They do this by operating their business based on certain governance and management principles, which allows them to make long-term investments and increase the resources that can be invested. Three types of investment character-

ize these family businesses: generously funding the company's key mission and the development of core competencies to achieve it, supporting the development of talent needed for these competencies, and helping to build strong relationships with external stakeholders who have access to resources that are important to the business. Investments create competitive asymmetry, as companies with different governance structures find it difficult to copy them (Le Breton Miller & Miller, 2006). The authors identify several governance and management factors that can promote the long-term orientation of the business: being family-owned and family-run, knowledge of the business, long tenure of executives, and consideration of new owners and managers from the next generation of families. They can provide the business with the incentives, powers, resources, and information that can help develop a long-term orientation (Le Breton Miller & Miller, 2006). Thus, if the family business has a long-term orientation, the manager's tenure is also longer, agency costs are reduced, resources are in surplus, and family management and ownership overlap (Rau, 2014).

The resource-based view sees the resources of family businesses as sources of annuity for the company and as a guarantee of the company's ability to renew, innovate, and become entrepreneurial. The latter are critical capabilities for the successful operation of the business (Le Breton-Miller et al., 2015). On the other hand, there are opinions that family businesses tend to lack talent, and family conflicts can hinder decision-making processes. Another negative feature is that managers choose workers from the family rather than from the labor market based on talent. One consequence of this nepotistic attitude may be a lack of talented people capable of innovation and entrepreneurship. According to Le Breton-Miller et al. (2015), this can be offset by a founding owner who has both managerial experience and a history of entrepreneurial success. However, this positive situation can turn negative if the next-generation family manager or executive lacks entrepreneurial talent.

Conclusion

Over the past two decades, family business research has sought to include the resource-based view in family business research from various aspects. Habbershon and Williams (1999) and Habbershon et al. (2003) formulated and elaborated the concept of familiness shortly after the emergence of the resource-based view, which currently seems to be one of the most significant theoretical frameworks of family business research based on the RBV. Despite its shortcomings, it can capture the unique characteristic of family businesses, namely that family businesses consist of a combination of resources and capabilities that are due to the interaction of three systems: business, family, and property (Málovics & Farkas, 2016), and that one of the most important resources of family businesses is the entrepreneurial family itself. In addition to familiness, the analysis of other important factors further enriched the resource-based view of family businesses. Understanding the process of knowledge transfer and successor development (Cabrera-Suárez et al., 2001) can contribute to successful succession. The resources of family businesses alone are not sufficient to achieve sustainable competitive advantage for businesses, this requires proper management and coordination of

resources, which is described in detail in the resource management process model developed by Sirmon and Hitt (2003). In addition to resources, the management system of family businesses influences the value-creation activities of the company, which is an important element in achieving a competitive advantage (Carney, 2005). Based on their investigation, Tokarczyk et al. (2007) found that familiness impacts the market orientation of a business. Certain resources of the firm, and the investment in these resources, can contribute to its long-term orientation and possibly its long-term survival (Le Breton Miller & Miller, 2006). The resource practices of family businesses are not only positive, but they can also lead to negative phenomena such as nepotism or the emergence of agency costs (Le Breton-Miller et al., 2015). The list is not exhaustive, there are many other RBV-based approaches to family business research. However, the research directions discussed here may show how diverse the application of the resource-based view can be in understanding the operation of family businesses.

Among the RBV-centered approaches to family business research, it is worth highlighting familiness and the system based on it (Habbershon & Williams, 1999; Habbershon, et al., 2003), because it introduced concepts that have stood the test of time, researchers often use them as reference points in recent research, and it paved the way for the emergence of new approaches such as the concept of socio-emotional wealth (SEW) (Berrone et al., 2012). Various empirical studies confirm the assumption of the familiness system, according to which there is a special relationship between family members, family units, and family businesses that distinguishes family businesses from non-family businesses and can be a source of lasting competitive advantage. Another key concept related to familiness is the concept of transgenerational wealth creation (Chrisman et al., 2010), which clearly distinguishes family businesses from non-family businesses and is also crucial for research on succession. One more possible direction of research is worth mentioning. This is an examination of the factors and resources that can contribute to the longevity of family businesses across generations and what factors may hinder this.

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Authors

BÁLINT, ÁGNES PHD HABIL., psychologist, associate professor, University of Pécs, Faculty of Humanities and Social Sciences, Institute of Education Sciences, Hungary. Research fields: educational psychology, metacognition, Theory of Mind, epistemic emotions, psychobiography. E-mail: balint.agnes@pte.hu

BÁNHEGYI, MÁTYÁS, Acting Head of Institute, Acting Head of Department and full-time associate professor at Budapest Business University. His research areas include ESP, language pedagogy, and translation studies. E-mail: banhegyi.matyas@uni-bge.hu

BAROS-TÓTH, ÁGNES, assistant lecturer, University of Pécs, Faculty of Humanities and Social Sciences, Institute of Human Development and Cultural Sciences, doctoral student, University of Pécs, Faculty of Economics and Business, Doctoral School of Regional Politics and Economics. Research areas: succession in family businesses, agency theory, stewardship theory and theory of socio-emotional wealth in family business research, firm longevity, business life cycles. E-mail: baros-toth.agnes@pte.hu

BÉRES, ANDRÁS, PhD student at the Doctoral School of Earth Sciences at the University of Pécs, teacher of biology and geography, University of Pécs, Faculty of Sciences, Institute of Geography and Earth Sciences, Hungary. Research fields: geography teaching, educational mobility. E-mail: beres.andras2@pte.hu

CSENGER, GYÖNGYI, assistant professor, Széchenyi István University - Faculty of Pedagogy, Humanities and Social Sciences - the Department of Education and Psychology. Research areas: sustainability, health education, physical and mental health, school violence. E-mail: csenger.lajosne@sze.hu

DŐRYNÉ ZÁBRÁDI, ORSOLYA PHD, assistant professor, Széchenyi István University, Apáczai Csere János Faculty of Pedagogy, Humanities and Social Sciences, Hungary. Research fields: linguistics; education. E-mail: zabradi.orsolya@sze.hu

FAJT, BALÁZS, senior lecturer at Budapest Business University. His research interests include individual learner differences, namely L2 learning motivation, anxiety and willingness to communicate, and EFL learning beyond the classroom, especially through different extramural English activities including especially films, TV shows and video games. E-mail: fajt.balazs@uni-bge.hu

FEKETE, RICHARD, PHD, associate professor, University of Pannon, Contemporary Hungarian Literature, feketerichard11@gmail.com

HORVÁTH-CSIKÓS, GABRIELLA, college associate professor, Budapest Business University, Faculty of International Management and Business, Department of Languages for International Business. Her main research interests are knowledge mentoring, language mentoring, soft and hard skills in labour market. E-mail: horvath-csikos.gabriella@uni-bge.hu

KÁLLAI, GABRIELLA, PHD, social worker, sociologist, special needs teacher; associate professor, University of Sopron, Benedek Elek Faculty of Pedagogy. Research fields: inclusion in education, sociology of education, early school leaving. E-mail: kallai.gabriella@uni-sopron.hu

KOVÁCS, TIBOR ATTILA, PhD student, PTE OTDNI, KRE PK, Assistant Lecturer. Doctoral dissertation topic is related to Hungarian grammar teaching in lower primary education. E-mail: kovacs.tibor@kre.hu

PETZNÉ TÓTH, SZILVIA PHD, assistant professor, Széchenyi István University, Apáczai Csere János Faculty of Pedagogy, Humanities and Social Sciences, Hungary. Research fields: mathematics; education; educational methodology. E-mail: toth.szilvia@sze.hu

SIPOS, JUDIT PHD, assistant professor, Széchenyi István University, Apáczai Csere János Faculty of Pedagogy, Humanities and Social Sciences, Hungary. Research fields: linguistics; education. E-mail: sipos.judit@sze.hu