Tampere University of Applied Sciences

# Generative AI in Education

## Mixed research on GenAI in educational practices among MEL students and alumni

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## 1 Introduction

*“We need to make wise decisions now, while we still have the wisdom to make them.” Dron, 2023*

Image generated with Bing AI

In the last couple of years education has seen revolutionary changes as Generative AI (GenAI) emerged. While there are both proponents and critics of GenAI in education, “triumphant talk of the ‘Coming of Age of AI in Education’” might not be too far away (Selwyn, 2023). At this point in time, the most likely scenario is that GenAI is here to stay, and not using it ‘can be equivalent to not using writing’. (Dron, 2023).

*But how can GenAI impact education, educators and curriculum?* I was asking myself this question during the Curriculum Design and Implementation course

at MBA of Educational Leadership at TAMK. It snowballed fast into more queries as following:

*Can GenAI be of help in creating a dynamic and emergent curriculum by saving teachers' time and energy? How might teaching and educational models change in the age of GenAI? Furthermore, can GenAI 'fix' issues that exist in education, and does education need to be 'fixed'?* (Teräs et al, 2020).

And one of the trendiest questions of our time: *will GenAI make human teachers redundant?*

These questions made me very curious, and I started to wonder if I should discover them further. So, I went to harvest the power of communities of practice (Wenger et al, 2000) that I've been a part of for the past 7 years, as well as the power of 'connectivism', which emphasizes the formation of new approaches and behaviors when new tools are used (Siemens, n. d.). As I turned to the 'global village' of fellow educators, I did the following:

- Conducted an informal survey asking educators in countries like Argentina, China, Australia and Uganda about their experience with GenAI use at work.
- Organized and hosted an event for educators in Berlin, Germany, where we discussed GenAI in education as part of a bigger topic "The future of education" (EduHarbor, 2023).

Findings from these two activities were insightful and motivating, providing supportive evidence that GenAI in education is an intriguing direction that's worth discovering further. So, I set up on a journey to find answers to the above stated questions.

The underlying hypothesis guiding this research is that the integration of GenAI has the potential to streamline educators' tasks, ultimately contributing to time savings and positive impacts on education as a whole.

However, finding answers in education might be tricky. Education is not a 'simple or linear' process, instead it is 'dynamic and adaptive' with a number of factors that influence it from students to teachers and parents, to politics and technologies, to name just a few (Curcher, 2023).

Moreover, according to Biesta (2021), questions related to education are 'existential questions', and attention of those who are being educated should be directed to the world. Thus, it seems to me that the questions of integrating emerging technologies into education can affect all areas of life, starting with ourselves, which is subjectification by itself (Biesta, 2021) and continuing into other domains of life. Ultimately, this dialogical approach can lead to restoring 'praxis' and to emancipation (Biesta, 2018).

A 'typical and intuitive' reaction of many to the use of GenAI in education is to ban or minimize their usage (Bieger, 2023). However, when learning is caused by unavoidable and urgent situations, a deep transformation takes place, potentially leading to a profound transformative learning and personality changes (Illeris, 2018).

A way forward could be simply taking a step-by-step approach. Discovering the 'adjacent possible', which indicates learning possibilities that happens right next to where we are now (Curcher, 2023), can lead to new ways of being creative alongside with 'new responsibilities for opening up education to more people' (Jon Dron, 2023).

Besides, unthoughtful and unethical use of GenAI can lead to serious consequences, presenting educators with the task to equip students with knowledge and skills needed to face new challenges (Monash Teaching Community, 2023). If educators choose to ignore emerging technologies like GenAI, they might stay behind and keep their students away from receiving crucial support on ethical and sustainable application of GenAI.

GenAI is already changing educational practices around the world and with this paper I intended to showcase some real-life applications of GenAI in order to start a conversation among educators. By showcasing GenAI application in educational practices and involving educators in a dialogue, we can establish cooperation to work towards a better future (Selwyn, 2023). Collaboration must be established among proponents and critics of GenAI in education to have more chances of shaping the future we'd like to see (Selwyn, 2023).

This dialogue is also needed to stay informed and aware on the topic of GenAI in education and, thus, avoid falling in the chaos and overwhelm of emerging technologies (Snowden, n.d.).

Moreover, creating certain routines can help shift perspective and make the learning transition, as well as acquisition of new roles and responsibilities, a smoother process (Snowden, 2002).

I hope this paper can help educators make their own conclusions through personal and organizational reflections (Design Council, 2021), connecting to their 'praxis' and resulting in informed and committed practical applications (Smith, 1996, 2000).

## 2 Methodology

The goal of this paper is to spark dialogue on the topic of GenAI in education by finding out what teachers think of GenAI and how they use it in their educational practices. To do that I chose a mixed study research method. This method combines quantitative and qualitative methods, allowing for more profound understanding of the situation (Ivankova, 2015).

The small-scale qualitative research to gather data on opinions and practices of GenAI in education was conducted within the closed LinkedIn MEL group.

First, I ran a survey about the use of GenAI in educational practices. I used Google Form to create the survey and Google Looker Studio to analyze the data. Twenty-five participants filled out the survey.

Second, after analyzing the survey findings, I selected three educators for an online interview. This selection was based on the criteria of the highest number in diverse GenAI applications in educational practices.

Third, I conducted 15-20-minute online interviews with the three responders. I used ChatGPT 3.5 to help create most concise and relevant interview questions. I used Zoom to conduct interviews. With the interviewees' agreement, I recorded the session and used the audio to feed to GenAI for transcribing and analyzing the data: AssemblyAI was used to transcribe the audio file, and ChatGPT 3.5 to help analyze the data.

When working with ChatGPT 3.5 I double proofread the information it generated. It was interesting to see how ChatGPT 'hallucinated' and fabricated some answers. It was yet another indicator of the importance to find ways to help next generations develop critical thinking skills and resilience, among other, to be able to work with tools that might provide wrong and misleading information.

# 3 Findings

## 3.1 Survey

The following questions were asked in the survey:

1. Are you using GenAI at work? Yes/No
2. If yes, what do you use it for:

- Generate content and course materials, such as lesson plans and other
- Generate ideas
- Proofread
- Summarize large texts
- Other (write your option)

3. If not, why not?

- I don't like it / don't trust it
- My organization doesn't use it, so I don't either
- I am not aware of how it can benefit my work
- Other (write your option)

25 MEL students, alumni and some teachers participated in the survey. As Figure 1, 88% or 22 educators implement GenAI in their educational practices, and 12% or 3 people do not.

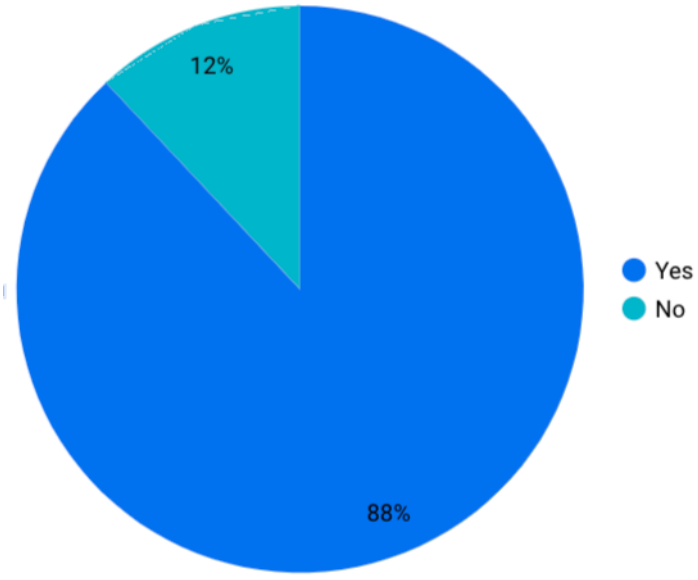


**Figure 1:** Percentage of educators who do and do not use GenAI in education.

The 3 people who do not use GenAI at work, stated their reasoning as following: ‘I am not aware of how it can benefit my work’.

Notably, two respondents out of the 22 who do use GenAI, ticked off both ‘yes’ and ‘no’ answers. One respondent stated that they use GenAI at work for proofreading and image creation but they also ticked a ‘no’ box, adding: ‘Some of the functions are too slow (it’s quicker to skim read myself than use ai to summarise) and there are many privacy issues I have to be aware of research and student data.’ The other respondent wrote that they use GenAI to generate ideas and get feedback on ideas but there is a concern on ‘ethical question of data scraping’.

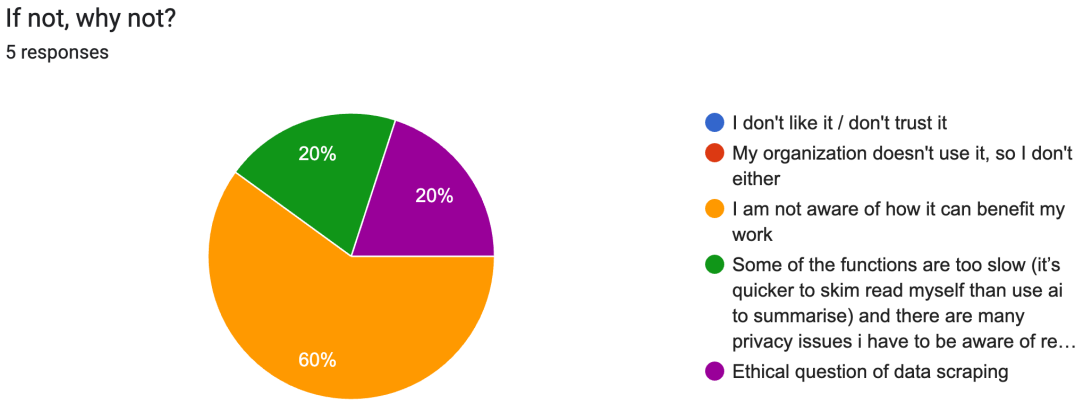


**Figure 2:** Respondents who ticked off ‘no GenAI use at work’ box.

The positive responses to GenAI usage in education were as following (table 1).

**Table 1:** GenAI activities in educational practices.

| Activity | Number of respondents |
|---|---|
| **Generate Ideas** | **13** |
| **Summarizing Large Texts** | **10** |
| **Generate Content and Course Materials** | **8** |
| **Proofread** | **5** |
| **Image Creation** | **4** |
| **Data Analysis** | **1** |
| **Policy Creation** | **1** |
| **Text Analysis** | **1** |
| **Language Alignment** | **1** |
| **Translations** | **1** |
| **Create Assessments** | **1** |
| **Feedback on Ideas** | **1** |
| **Research Assistance** | **1** |
| **Listening to Texts** | **1** |
| **Literature Review** | **1** |
| **Poem Creation (for Fun)** | **1** |

Educators mostly use GenAI to generate content and course materials, generate ideas, proofread, summarize large texts and image creation.

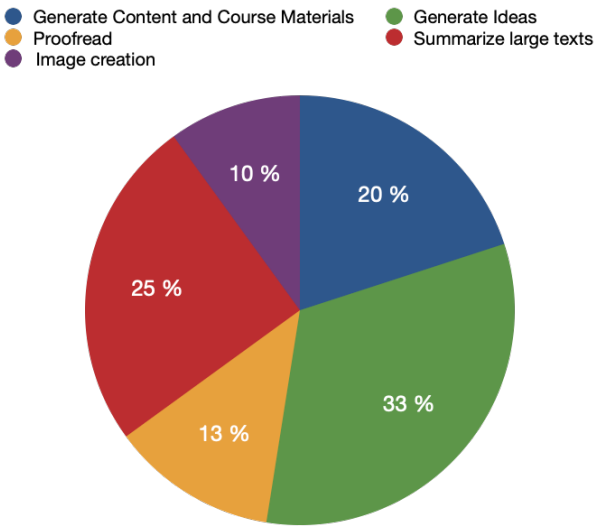

**Figure 3:** Key activities of GenAI in education.

### 3.2 Interviews

Based on the survey answers, I invited 3 people to an online 20-mintes interview and asked the following questions:

1. What are your thoughts about using AI in Educational practices?
2. Could you provide examples of tasks or activities in your teaching routine that you chose to do with the help of GenAI?
3. In your teaching experience, what are some challenges that educators commonly face in their daily work, and what is your take on GenAI addressing any of these challenges?
4. In your view, how might the role of a teacher evolve with the increased integration of generative AI in educational settings?
5. Do you think there should be any training or support do you believe would be beneficial for teachers to effectively utilize generative AI tools in their teaching? Why so?
6. Are there specific subjects or areas within education where you see potential for generative AI to have a significant impact?
7. Can you share insights into the ethical considerations that should be taken into account when implementing generative AI in education? Do you have any concerns about GenAI, if yes - what?

These questions represent four key areas of interest to this research, as seen in Figure 4:

1. Generative AI Usage in Education
2. Impact on Teaching
3. Training and Support
4. Ethical considerations

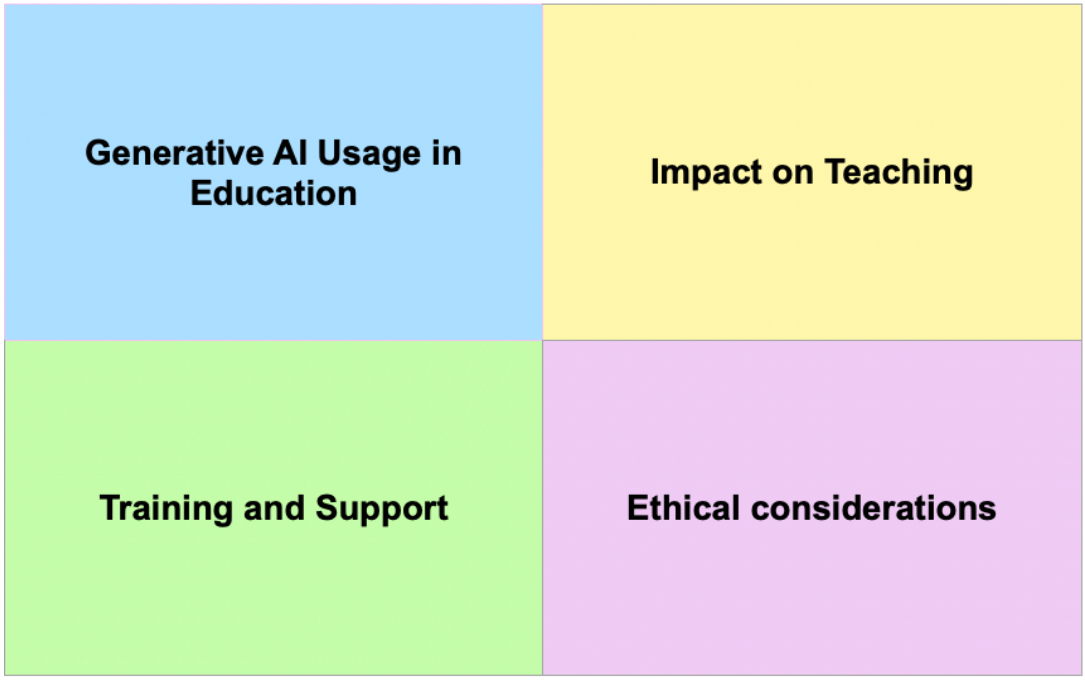


**Figure 4:** themes for Interview questions

Results of each area are showcased below. All in all, the following key categories emerged throughout the research:

- Advocacy
- Integration
- Efficiency
- Ethical Balancing

## GenAI usage in education

**Table 2:** GenAI usage in education.

| | Interviews summary |
|---|---|
| GenAI usage in education | • Strong advocacy for generative AI in education.<br>• Active encouragement for students and staff to embrace generative AI.<br>• Ongoing creation of a school policy on AI usage.<br>• Integration of AI in various aspects, including generating mission and vision statements.<br>• Application of AI in art classes for inspiration.<br>• Use of generative AI for optimizing operational aspects like timetabling, scheduling, and checking exam papers.<br>• Focus on making educational processes smarter and quicker through AI.<br>• Versatile applications of AI in creating exercises, interactive lessons, and generating educational materials.<br>• AI's usefulness in areas where expertise is lacking, enhancing efficiency.<br>• Acknowledgment of the inevitability of AI in education.<br>• Active utilization of generative AI (e.g., ChatGPT) for creating questions, answers, stories, texts, and poems. |

Table 2 shows a strong support for GenAI usage in educational practices for various activities.

One of such activities, for instance, is to generate content according to either Barret's taxonomy, used to assess students' reading levels (Krismadayanti et at, 2022), or Bloom's Taxonomy, used when creating learning processes (Nwlink, n.d.). It is very likely that Bloom's Taxonomy will be eventually integrated into learning platforms and, thus, reduce teachers' workload (Shah, 2023).

## Impact on teaching

**Table 3:** GenAI impact on teaching.

| | Interviews summary |
|---|---|
| Impact on teaching | • Generative AI is seen as highly valuable in education.<br>• Primary role is to streamline administrative tasks and enhance teaching efficiency.<br>• Educators anticipate AI's automation capabilities, especially in creating assignments and lesson plans, to significantly reduce their workload.<br>• Increased efficiency is expected to allow educators to focus more on pedagogy and creatively shaping lessons.<br>• The perception is that AI is a supportive tool, not a replacement, emphasizing the importance of maintaining a human touch in education.<br>• Consensus is that generative AI has the potential to make educators' lives easier.<br>• It provides more time and space for educators to excel in their core role of fostering meaningful learning experiences for students. |

The impact on teaching is positive, as indicated in the interviewees' answers (Table 3). The data shows that GenAI helps with the workload, leaving more time and space to students' interactions. In general, GenAI is viewed as a tool to make educators' lives easier.

Interestingly, when talking about the potential for a teacher's role to evolve with increased use of GenAI, one educator touched upon an important topic of well-being. According to one interviewee, GenAI usage can help 'take away some stress' resulting in the teacher being 'less irritated' in class.

Teachers' wellbeing is a crucial topic as it may influence teacher effectiveness in the classroom and, thus, students results and education overall (Bardach et al, 2022). When striving for high quality education, the most important thing in the classroom remains a human expert, a teacher. GenAi does not change that (UK Department of education, 2023).

## Training and support

**Table 4:** GenAI training and support.

| | Interviews summary |
|---|---|
| Training and support | Strong Advocacy for Training:<br>• Emphasizes the strong need for training and support to empower educators in effectively utilizing Generative AI tools.<br>• Highlights the importance of training in ethical usage, leveraging the tool, and maintaining a balance between AI assistance and pedagogical principles.<br>Implementation in School Group:<br>• Describes ongoing efforts within a group of schools aimed at centralized training on AI usage.<br>• Focuses on collaborative sharing of tools, encouragement of usage, and comprehensive training sessions covering both educational and administrative aspects.<br>Gradual Shift in Training Approach:<br>• Advocates for a gradual shift in training strategies, starting with early adopters and progressively reaching a wider audience.<br>• Points out the potential benefits of proper training, including enhanced efficiency, encouragement of critical thinking, and maintaining a balance between AI support and pedagogical considerations.<br>Basic Training Needs:<br>• Suggests the necessity for basic training on available AI tools for educators.<br>• Emphasizes training in effective prompting of AI to meet educational needs and recommends a one-time training session to equip teachers with essential skills. |

There is a high need for training and support in GenAI usage in education (Table 4). According to the interviewees, few approaches can be taken in this aspect:

- School centralized training.
- Gradual training approach with early adopters eventually influencing wider audience.
- Basic training such as a one-time session on available tools and their usage.

Based on findings of UNESCO (2023), teachers need to be supported through training and continuous coaching on the use of GenAI. However, there are no well-structured training for teachers on the use of AI in most countries in the world, needless to say on the use of GenAI. So far, only China, Finland, Georgia, Qatar, Spain, Thailand, and Turkey have an 'AI for teachers' training framework or training program (UNESCO, 2023).

At the same time, in England educational institutions take initiatives to suggest training priorities for university-level students, such as 'staff should be equipped to support students to use GenAI tools effectively and appropriately', 'universities should adapt teaching and assessment to incorporate the ethical use of GenAI' and suggesting that universities should collaborate on best practice sharing in regards with GenAI (King's College London, n.d.).

## Ethical considerations

**Table 5:** Ethical considerations for GenAI use in education.

| | Interviews summary |
|---|---|
| Ethical considerations | Ownership Concerns:<br>• Raises questions about the ownership of work created with AI, pondering whether attribution belongs to the teacher or the AI itself.<br>• Considers the ethical dimensions of ownership and usage, emphasizing the need for clear guidelines on authorship.<br>Balancing Efficiency and Pedagogy:<br>• Expresses concerns about a potential over-reliance on AI, pointing out the risks of overshadowing pedagogical aspects for the sake of efficiency.<br>• Advocates for a balanced approach, recognizing the need to achieve efficiency without sacrificing the holistic well-being and developmental needs of students.<br>Ethical Usage Emphasis:<br>• Stresses the importance of ethical usage of AI, cautioning against its misuse for tasks that may compromise academic integrity.<br>• Highlights concerns about potential misuse and the need for educators to uphold ethical standards in AI-assisted activities. |

As Table 5 indicates, concerns raised about GenAI usage include ownership aspects, misuse of the tool, the need for high ethical standards, the need to prioritize pedagogy and students' needs over efficiency that comes with using GenAI tools.

UNESCO (2023) advises educators to be driven intrinsically, to keep human agency, responsibility and professionalism when deciding on the ways to use ChatGPT. When it comes to the accuracy of the generated content, educators are held accountable for any decisions made in relation to the provided content (UNESCO, 2023)

## Additional findings

### Impact of GenAI on various subjects

One of the questions was as following: “Are there specific subjects or areas within education where you see potential for generative AI to have a significant impact? What leads you to this perspective?”

The three answers to the question are summarized in Table 6 below.

**Table 6:** GenAI significant impact.

| Question / Responder | **Are there specific subjects or areas within education where you see potential for generative AI to have a significant impact?** |
|---|---|
| **Interviewee 1** | The potential impact of GenAI on education is positive overall and there is no a subject where GenAI could not have a meaningful impact. Example: in their school GenAI was used to stimulate inspiration. |
| **Interviewee 2** | There is interest in how GenAI might assist in subjects that are not necessarily language-based, such as Physical Education and the arts. GenAi can potentially provide help in creating lesson plans, assignments, and interactive activities. |
| **Interviewee 3** | Curious about how GenAI works outside of language subjects and states that they heard GenAI could code. They started with teaching kids robotics and coding but the interviewee had limited knowledge about it. |

Noticeably, there is a tendency towards the impact of GenAI on non-language subjects, such as arts, physical education, robotics and coding.

## 4 Educational Compass

The findings of this research fell into one piece and seemed to appear as some kind of ‘educational compass’ presented in a flexible shape, corresponding to the true nature of education as a dynamic process.

The educational compass I drew while analyzing the results of this research, is a yo-yo (Figure 5), a toy that bounces up and down when used by someone.


Its rolling movement represents its emergent nature and balances out each aspect that’s important to the topic of interest, in our case – using GenAI in educational practices. Each part of the yo-yo is co-dependent and directly impacting all teaching practices, including curriculum design, training and cooperation, ethics and sustainability.

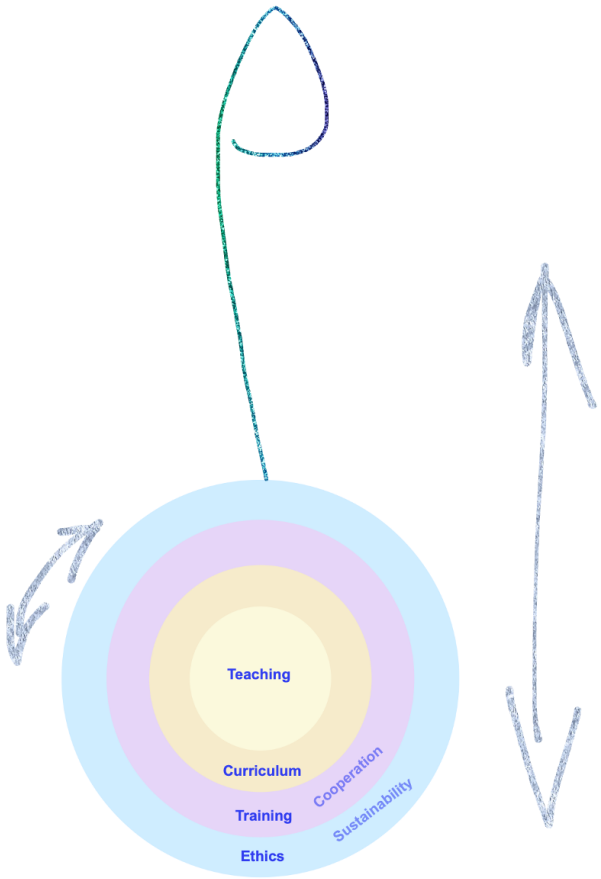


**Figure 5:** Educational Compass.

The strength of a yo-yo, however, depends on many factors that are not always up to the person holding it, such as physical or mental state, societal pressure, traditions, politics, access to opportunities or lack of such, etc.

This ‘yo-yo educational compass’ is intended to be a reminder that education is a complex concept and process, which is by nature dynamic. Thus, its unity and balance are important, as all aspects can affect each. While priorities might shift occasionally, each of these parts is equally important to ensure smooth running of the holistic system.

Only when all the aspects are in balance, we can have proper integration of emergent tools such as GenAI, teachers work can be more efficient, and ethical balance can be achieved alongside advocacy for thoughtful educational practices.

Educational Compass, and education by itself, is not about one direction at a time. It’s about all crucial aspects intervened and integrated into a holistic and dynamic process. The findings from this small research paper confirm that every area impacts one another and, thus, they should be all equally paid attention to.

## 5 Conclusions

It is important to highlight that this is small-scale research that represents the views of a handful of educators who participated in the process. Thus, it does not represent the overall opinion of educators and is not intended to do so.

Nevertheless, the conclusion of this research is that educators are genuinely interesting in this evolving technology, its application and impact on education. They actively and diversly implement GenAI in their daily work. Navigating the uncharted territory of GenAI, they genuinely aspire to find ways to use GenAI to help create more space and time to focus on such important things as establishing meaningful interactions with students, among other.

Simultaneously, it is evident that training and support is needed to further equip educators with skills to use GenAI, and to cover the ethical aspect of GenAI implications. A topic of teachers' wellbeing came up in the findings, emphasizing how GenAI can help reduce educators' workload and, thus, stress. Overall, there are clear indications of a potential evolution of an educator's role.

While we did not focus much on GenAI risks, there was a clear thread of ethical concerns which included ownership of work, balance of pedagogy, and potential misuse of the tool.

The above findings support the hypothesis that GenAI can help educators save time and benefit education overall, positively impacting all areas of education, from curriculum design and lesson planning to actual teaching in the classroom.

Further research on areas mentioned in this paper is recommended, preferably in a multi-level approach to involve all stakeholders in education.

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