Practical Ways Educators Can Introduce Empathy into AI-Supported Learning

Abstract

With generative artificial intelligence (AI) becoming a permanent fixture within the education system, the role of the teacher as a knowledge transmitter is slowly transitioning to one that is more concerned with guiding the learner cognitively and emotionally. Although AI increases efficiency and scalability and makes information readily available, the technology cannot evoke empathy, contextual judgement, and relational skills needed for effective learning. AI's increasing influence in educational settings has also transformed the learner's interaction with knowledge.

This study outlines a practice-based action research study carried out over four weeks among classes undertaking a diploma programme. The intervention involves using repeated teaching practices, observation in the classroom setting, and facilitating learning processes in an empathic approach to regain learner autonomy when using AI. Preliminary results show excessive reliance on generated output where many learners were unable to explain their AI-produced work. However, structured interventions based on empathy resulted in increased learner autonomy.

Important strategies involve reflective questioning, guided interactions with AI, and emotionally intelligent mentoring. Moreover, an assessment tool called Readiness for AI Engagement Diagnostic (RAIED) is proposed for use by teachers in measuring and guiding engagement by learners with AI. It appears from the study’s findings that integrating empathy within pedagogical practices is critical for ensuring that AI enhances human learning.

Keywords

Empathic pedagogy, Generative AI, Action research, Human-in-the-loop learning, Cognitive offloading, AI engagement readiness.

1. Introduction: The Empathy Gap in AI-Supported Learning

As technology continues to evolve at a rapid pace in the field of generative AI, a complete transformation has occurred in how learning happens. This is because contemporary technology is not only able to respond, think and reason like humans but also create outputs that resemble those of human beings. Consequently, learners have been forced to adjust themselves to the changes in their methods of undertaking academic tasks, such that the time between asking and answering a question is greatly reduced.

This is a drastic transformation that poses great possibilities as well as challenges to learning and education (Kasneci et al., 2023). On one hand, such development has obvious benefits. On the other hand, there seems to be a certain shift in the relationship between learning and the process. There is a risk of learning turning into a transaction where the output is valued more than understanding, and efficiency becomes the primary mode.

The global theory, as per the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2023), suggests that the use of AI should supplement human capabilities for thought processing. On the other hand, it is possible to distinguish between theory and practice when it comes to the actualization of the theory, wherein people interact with artificial intelligence on their own without relying on help from anyone else. This results in the formation of different learning spaces, allowing for efficient acquisition of information.

Nevertheless, the lack of dialogue means that there may be some missing parts to the students' knowledge, and while their answers might look fluent and correct, students will be detached from the reasoning that leads them to such answers. In this case, we speak about the "illusion of competence," where fluency is perceived as competence.

The core of the problem in question may lie in what could be called an empathy gap.

While advanced and complex, AI systems do not have the capability to demonstrate emotional intelligence, to contextualize interactions, or to interpret the subtleties of psychological exchange.

However, solving this problem does not mean abandoning AI; it requires shifting away from the educator's traditional role and embracing new responsibilities. In other words, an educator becomes an interpreter of thought, an inquiry facilitator, and an emotional presence in the AI environment. By doing so, he or she enables a learner to establish connection with the process of learning rather than just its product. This research seeks to find out how this shift can be achieved in practice by employing a carefully designed and empathic intervention strategy.

2. Problem Statement: The Erosion of Human Agency in AI-Supported Learning

The early observation made in various batches of students obtaining diplomas showed a common trend that was not favorable. Though the students could write an excellent piece of writing through the use of generative AI, it became clear that their level of understanding did not match the quality of their assignments. In four weeks of conducting the routine instructions among classes that ranged between 10 to 25 students, about 95% of the learners depended on AI. Most importantly, almost 80% of the students could not account for what they had done.

Such dissonance can be considered cognitive offloading, which refers to the act of moving thinking processes from oneself to other individuals (Risko & Gilbert, 2016). It is vital to mention, however, that offloading does not necessarily have negative consequences since, if done through the process of metacognition, it can even improve academic performance due to more complex questions being posed (Iqbal et al., 2025).

Although cognitive offloading can lead to increased efficiency, its overuse limits cognitive involvement and undermines the learning process. This effect becomes apparent in AI-assisted education systems in terms of reduced ownership rather than no output.

Another associated problem that was noted was that of linguistic discrepancy between written input and verbal elaboration. Learners often provided sophisticated answers laced with technical vocabulary and logical arguments that went beyond their natural communicative styles. When asked for further clarification, most were either reluctant or unable to provide more detailed accounts, thus indicating that they did not understand the language fully.

2.1. The Silence of the Cocoon: Emotional and Cultural Dimensions

Apart from the cognitive tendencies, there was another aspect of emotional nature discovered in the classroom setting. Some of the students showed their reluctance to engage verbally in groups, especially when they had to do so in English. The issue was not related to their skills but their cultural background and anxiety about criticism.

The students could freely interact in informal situations. However, in formal classroom settings, there was usually silence. After class, some of the students admitted that they did not want to look too enthusiastic or make any mistakes in front of others. It is similar to other observations made regarding the influence of social perception on participation (Hattie, 2023).

Within this framework, the use of AI served as a psychological barrier. This is because AI gave the students the ability to answer questions without having to reveal their lack of knowledge. Although this was less stressful in the short term, it further entrenched social isolation. Students began functioning inside what can be referred to as cocoons, in which they engaged with AI rather than their peers and teachers.

This observation aligns with issues articulated by Sherry Turkle. She identifies that people can lose social interaction when they depend on digital tools while believing that they have connections (Turkle, 2017).

2.2. Anthropomorphism and the Illusion of Authority

A less obvious but equally important pattern in learner behavior concerned their tendency to confer authority upon AI programs. Often, students considered AI-created outputs to be automatically true and rarely questioned their validity. The attribution of authority is a form of anthropomorphizing AI into an intelligent agent rather than a system of probabilities.

Such a pattern becomes even more concerning when AI hallucinations occur. In one class discussion during a review session, a student cited sources that seemed credible but ultimately were non-existent. After the student was called out for using a dead link and was asked about her source, she revealed that she had used AI but had failed to verify her findings. Such instances were not uncommon.

Scholarly investigations of large language models have reported similar concerns regarding AI hallucinations. Outputs generated by such systems are based on probabilities, not facts (Bender et al., 2021). Learners, left unguided, might mistake fluency for truth.

2.3. The Illusion of Competence

These traits combined lead to the illusion of competence, where students seem to have the skills based on the output, but lack the understanding necessary to provide an explanation for their actions and to adapt and expand their knowledge.

The danger lies in the fact that such illusion cannot be easily detected since traditional assessments might be unable to detect it, especially when written work is considered the main type of submission. Hence, students would complete various educational assignments while not gaining the intellectual depth needed.

From a pedagogical point of view, there is no problem with the usage of AI per se; it is more a problem of lack of instruction in how to use it correctly. According to Luckin, "the future of education will depend on how well humans can learn to learn alongside machines" (Luckin, 2018). The challenge consists in making the process two-way and not one-sided.

2.4. Reframing the Problem: From Misuse to Misalignment

It should be emphasized that the described behavior is not caused by any form of resistance or a lack of willingness to change. No signs of opposition have been registered as soon as the new strategies were implemented. Rather, the problem can be attributed to an inadequate alignment of students' expectations and intentions than to any misuse of technological tools.

Indeed, students are actively employing AI in ways that maximize efficiency due to the nature of the system itself. At the same time, the absence of appropriate pedagogical context leaves them unprepared for critical engagement with these resources.

Therefore, the challenge is two-fold:

1. **Cognitive Re-Engagement – Encouraging students to transition from passive information intake to active knowledge building**
2. **Emotional Re-Connection – Creating a supportive environment where students feel comfortable expressing and refining their thoughts**

Both aspects require a more comprehensive approach that goes beyond mere instruction in technical skills. What is needed is a pedagogy of empathy that acknowledges students as complex human beings navigating a range of emotions including uncertainty and confidence.

3. Methodology: A Practice-Based Action Research Approach

This reflection is based on pedagogical observations, following the practitioner action research framework. The process involves iterations of interventions and reflections that occur during actual class instruction sessions. Instead of testing any theoretical model, the study emphasizes improving practices using observations, adaptations, and refinements.

3.1. Observational Approach

In this research, a practice-oriented methodology for making observations during normal teaching procedures is adopted. No specific experimental setup and/or data collection process have been put in place. In this case, information was gathered through reflective observations made on the behaviors exhibited by learners during normal classroom interactions and discussions.

These reflective observations involved monitoring repeated behavioral patterns among learners such as dependence on AI output, ability to respond, validation approaches, and levels of involvement.

Through this approach, the normal teaching process was not interrupted. Such action research is especially relevant for changing educational environments in which new technologies, including generative AI, continuously redefine learning behavior. Action research helps teachers intervene in actual teaching situations, observe changes, and adapt further interventions accordingly.

3.2. Context

Observations were made during routine instruction in various diploma classes that had from 10 to 25 students each. It lasted for four weeks and included not only written assignments but also oral presentations.

The dual nature of the assignment was very deliberate since while one gave information on the nature of the AI assistance used, the other made it possible to assess students' understanding of the material and their ownership of knowledge gained.

3.3. Action Research Cycle: Plan–Act–Observe–Reflect

The intervention proceeded following a strict, four-step process:

1. **Plan**

   The initial observations revealed the presence of three core problems:

   - High reliance on the outcomes produced by the AI

- Insufficient capacity for justifying and explaining responses
- Low contribution through verbal discussion participation

All three patterns suggested cognitive disengagement and emotional hesitance at once – an indication that the proposed intervention had to tackle two aspects at once.

2. **Act**

Empathy-driven teaching techniques included such measures as:

- Reflection to promote the feeling of ownership
- Directed usage of AI to foster perspective change
- Emotional considerations while facilitating students

The design of this approach focused specifically on promoting guidance as opposed to any form of restrictions.

3. **Observe**

Learners behaviors were carefully observed in a natural classroom setting, using several metrics:

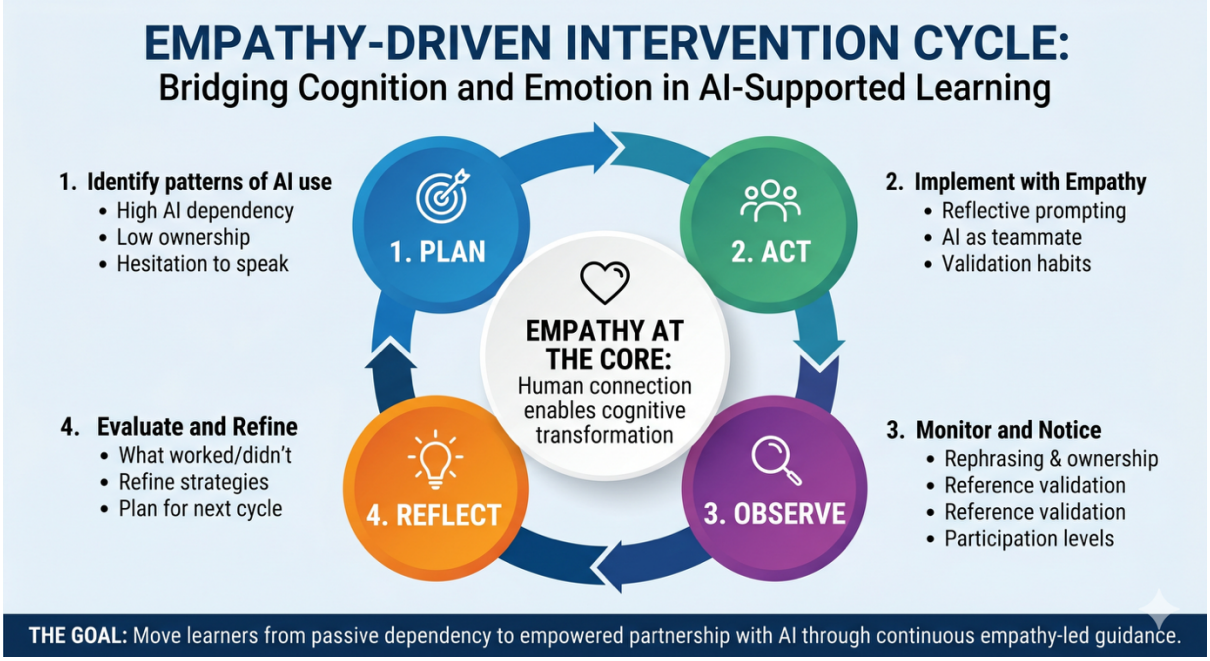
- Ability to paraphrase and contextualize AI-produced content
- Will to reference and validate any information provided
- Tendency to discuss and present their findings during lessons
- Confidence in speaking out in class

This monitoring process entailed both structured and unstructured observation.

4. **Reflect**

The teaching approach constantly evolved based on the feedback:

- High resistance to speech entailed one-on-one coaching
- The occurrence of hallucinations led to collective analysis
- Consistent mis usage of language entailed rephrasing drills



3.4. Pedagogical Design: The Good-Cop, Bad-Cop Progression

A crucial component of the intervention was a shift in the educator's role, envisioned as a Good Cop-Bad Cop sequence. It should be emphasized that the approach was not employed as a technique; it was a relational one that developed gradually.

Phase 1: The Supportive "Good-Cop" (Building Rapport)

In this first stage, the educator took up a supporting role, assuming an attitude akin to that of a peer. Key goals for the educator included:

- Building rapport
- Safeguarding against the fear of being judged
- Fostering early submission of assignments

The students were permitted to submit partially completed assignments or those done with assistance from AI tools without any repercussions. Rather than fixing mistakes, it was important to explore them. One of the techniques used by the educator in this phase is called a "fishing" method. Instead of correcting the student, the educator would ask questions to encourage them to identify the errors themselves:

- "Can you paraphrase this sentence?"

- “How did you reach this point?”

This method encourages reflective learning. With respect to constructivist ideas, this technique can be tied to the conceptual outlines recommended by Jean Piaget. He maintained that people obtain new comprehension through multiple exchanges and reflective exercises (Piaget, 1952).

Phase 2: Evaluative “Bad-Cop” (Accountability)

As the intervention continued, the educator moved on to become more evaluative. This phase was mostly used during the assessment phase.

At this point, learners had already:

- Gained iterative feedback
- Acquired knowledge about AI weaknesses
- Gained confidence in communication

Consequently, it did not appear to be a punishment for them when strict criteria were applied. Instead, they treated it as a normal procedure. It is worth mentioning that there was no significant opposition to this shift in the role of the educator. Therefore, it can be stated that empathy-driven involvement creates readiness for accountability.

3.5. Bridging Cognition and Emotion

One significant aspect of the methodology is that of its double emphasis:

Cognitive Dimension:

Reasoning, validation, and ownership

Emotional Dimension:

Confidence, fear, and participation

The methodology involves principles of care-based pedagogical theory, where relational knowledge forms an important aspect in the process of teaching (Noddings, 2013). Although AI can help with cognition, it fails to help with emotional readiness. In this regard, the teacher acts as the link between the two.

3.6. From Instruction to Facilitation

In order to implement this intervention, a complete change in pedagogical practice was needed, as the teacher had to become:

- A thinker's facilitator
- An AI interpretation guide
- Emotionally stabilizing learners' presence

The change mentioned here corresponds to some general views on interaction between people and AI technologies, in which the role of a person does not lose its importance (Luckin, 2018).

3.7. Transition to Intervention Strategies

Given this background in terms of methodology, the second part of the investigation involved the conversion of these insights into practical classroom approaches. This was done in an effort to:

- Redefine AI use
- Encourage learner control
- Sustain motivation through emotionally resonant approaches

4. Implementation Strategies: Preserving the Human Element in AI-Supported Learning

The essence of this intervention is the strategic redefinition of AI - no longer as a means to an end but rather as a participant in a shared effort. This did not happen by mere pedagogical explanation; instead, it happened via carefully constructed but flexible approaches in the classroom that served to reactivate cognitive and affective involvement.

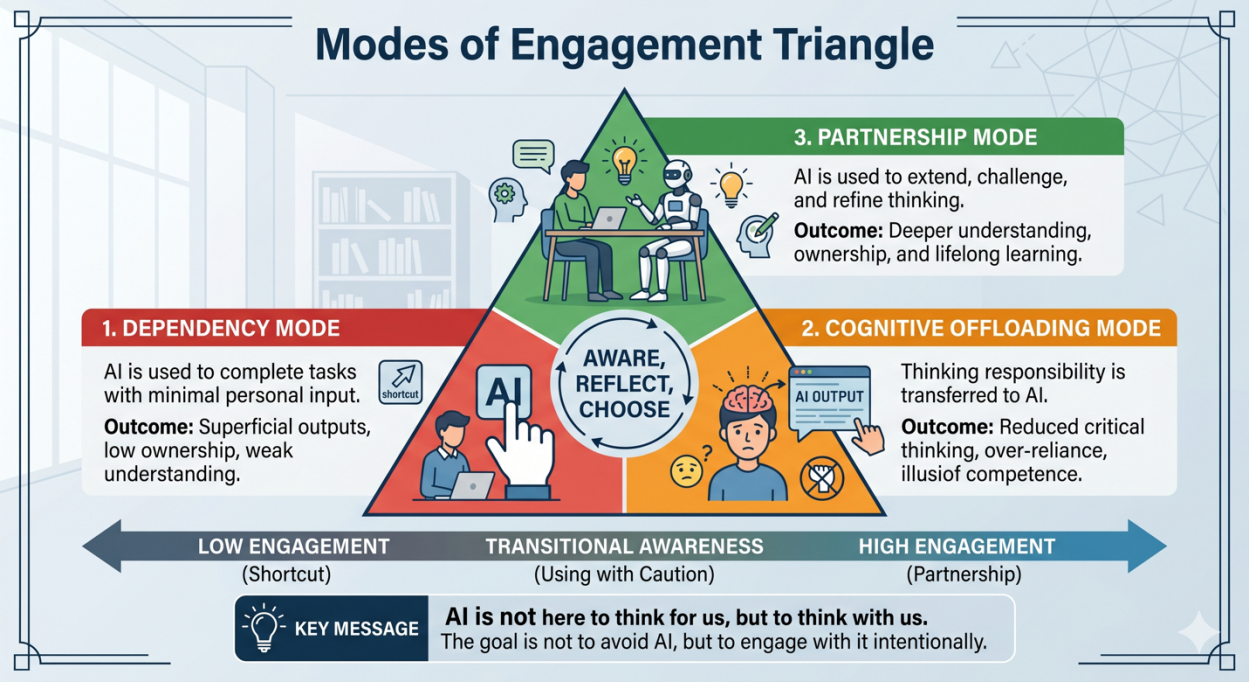
By taking on the role of a prompt for thought, rather than a source of solutions, the need for interpretation, verification, and customization became necessary. Three fundamental approaches were adopted.

4.1. The Modes of Engagement Framework: A Metacognitive Mirror

In an attempt to make students more mindful of how they were dealing with the AI, a straightforward but highly effective reflective model was devised. Learners were asked to determine how they engaged with AI in three ways:

1. **Dependency mode**
   Using AI to perform tasks with minimal input from them.
2. **Cognitive offloading mode**
   Assigning thinking responsibility to AI.
3. **Partnership mode**
   Using AI to expand upon, test, and deepen their thinking.

This reflective approach became a mirror for metacognition, where learners were able to reflect on themselves without outside judgment.



To contextualize this abstraction, discussions in the classroom often involved real-life scenarios. For example, one such discussion starter involved what was termed the

"Toto lottery." Students would be required to consider whether the lottery winner had an obligation to provide funding at once or establish a sustainable project.
While this initially may have started out as a simple discussion, soon enough, students started reflecting on issues of sustainability, accountability, and impact. The focus shifted not just from an individualistic perspective, but to a more collective one.
This method served as an efficient tool in counteracting the predictability and monotony associated with AI communication.

4.2. Reflective Prompting and Validation Habits

One of the most significant changes that came into play throughout the process is the shift in students' attitude towards learning from being output-oriented to knowledge-based.

There were three major steps taken for this to happen:

1. **Rephrasing for Ownership**
   Students were asked to rephrase the answers generated by AI tools. This helped ensure consistency between the language and the understanding of its meaning.
2. **Validation of References**
   Generated references were carefully checked for accuracy. While hallucinations were not penalized initially, they were considered chances for growth. One of the pivotal moments in class happened during a group session, when an apparently reliable source turned out to be fake. After an extensive discussion led by me, the student admitted to using AI-generated references without verifying them first. It had quite an impact on the rest of the class.
3. **Explainable Reasoning**
   Students were encouraged to give reasons for an answer rather than simply stating it. It is in line with explainability principles in human-centered AI systems (Liao & Varshney, 2022).

4.3. Understanding AI as Probability: The “Sky is ___” Exercise

In order to deal with the problem of anthropomorphism regarding AI, the following simple question probe was employed in class:

"The sky is ____."

Student answers varied from "blue," "bright," or "dark." The issue turned to be not about what the right answer was but what answer would be the most probable. This experience led to another realization that was a breakthrough for many students: AI does not know anything about the world "the way people do."

4.4. The “Overfitting Dress” Rule: Aligning Expression with Understanding

One of the most effective strategies resulted from a very simple metaphor.
The idea was to imagine if the students wore a dress which is extremely tight and uncomfortable for them. This example was then used for their assignments.
An assignment done by an AI that was overly complicated or beyond their linguistic capabilities was seen as "overfitting" their abilities. Although such answers sound impressive at times, they limit the student's ability to explain themselves further.
Therefore, the students were advised to "tailor" the AI outputs to make them fit themselves better by:

- Using simpler language
- A different tone of voice
- Congruent with their own thoughts

Over time, the students internalized this strategy and began seeing the answers generated by AI just as the initial draft.

4.5. Introducing the RAIED Framework: A Diagnostic Tool for AI Engagement

As an accompaniment to these methods, a light weight diagnostic method was designed for use throughout the intervention:
RAIED: Readiness for AI Engagement Diagnostic

The purpose of RAIED is to assist educators and learners in assessing how artificial intelligence is being applied in the learning process. This method emphasizes the detection of patterns of engagement rather than performance evaluation.

Dimensions Assessed in RAIED

This diagnostic test is made up of five dimensions:

1. **Dependency vs Ownership**
2. **Validation Behaviour**
3. **Articulation Readiness**
4. **Emotional Confidence**
5. **Perception of AI (Tool vs Authority)**

Sample Items (Excerpt)

Learners indicate their responses using a five-point Likert scale:

- I depend on artificial intelligence to complete the majority of my assignments
- I can paraphrase AI generated responses
- I verify references supplied by artificial intelligence tools
- I am confident discussing my assignment in class
- I perceive artificial intelligence as a tool under my control

Note: To maintain response balance and reduce acquiescence bias, selected items are reverse-coded within the instrument.

Scoring and Interpretation

Scores are mapped across three engagement levels:

Score Range	Interpretation
Low	Dependency Mode
Medium	Transitional Awareness
High	Partnership Mode

Actionable Feedback (Immediate Diagnostic Output)

A particular set of intervention strategies may be proposed for each band:

1. **Dependency Mode:**
   Highlighting the need to rephrase and engage in validation activities.
2. **Transitional Mode:**
   Encouraging the use of logical inquiry questions.
3. **Partnership Mode:**
   Fostering the development of critical extension and independent thinking skills.

Deployment Model (Ethical and Scalable Use)

For the proper use and scaling of the tool:

- The tool does not collect any personally identifying data
- Only aggregated usage trends are recorded
- Students receive immediate diagnostic feedback after finishing the test

The complete assessment tool is built to be administered using an online form (Google Form, for instance), giving teachers the ability to use it on their own while adding to anonymous usage statistics.

- Regarding this research project, RAIED served dual purposes as:
- A reflective tool for students
- A guide for teachers

Positioning Within the Intervention

Whereas formal psychometric tools have been created with the purpose of measuring certain factors, RAIED has not been created as a measuring instrument meant to measure something in the course of the research. Instead, this tool is used as a practitioner-oriented reflective tool meant to be used right away within the classroom. It is created to increase the level of awareness among learners that will assist them shift from dependent learning to collaborative learning.

Accessing the RAIED Diagnostic Tool

For wider application beyond the classroom setting, the RAIED diagnostic has been developed into an easy-to-use online tool. It is intended for quick implementation in learning environments and offers instant, reflective feedback on learners' engagement with artificial intelligence. Below is an excerpt of the diagnostic questions:

I use AI to do most of my tasks
I check citations recommended by AI applications
I am able to paraphrase AI-assisted solutions
I am comfortable presenting my tasks during class
AI is a tool for augmenting my cognitive processes

Answers are collected through a five-point Likert scale from strongly disagree to strongly agree. Some questions are negatively coded to maintain balance within behavioral categories.
The full version of the diagnostic tool can be found at the following URL: https://tally.so/r/Pd8lGe

The tool does not seek to acquire any form of personally identifiable data. Answers received will be anonymous, and data collected will only be used collectively for purposes of refining AI-assisted educational practices.
For educators, the tool is an easy way to assess learner readiness in relation to several aspects, such as dependency, validation, articulation, and emotional confidence. For learners, the tool gives an instant assessment of their participation behavior with suggestions on how to improve.
By virtue of this design, the diagnostic serves not only as an evaluation tool but also as an intervention tool within the AI-supported environment.

5. Findings: Observable Shifts in Engagement and Ownership

Behavioral Indicator	Early Stages	Mid/ Late Stage
AI Dependency	Approximately 95% of learners relied heavily on AI outputs	Reduced reliance with increased modification (qualitative observation)
Justification Ability	Approximately 80% unable to explain submissions	Around 70% showed improved rephrasing and ownership
Class Participation	Low engagement levels	Improved to moderate participation
Verbal Confidence	Limited willingness to speak	Increased participation, though not uniform

These trends are based on aggregated classroom observations across multiple batches and are intended to provide directional insight rather than statistical generalisation. There were tangible effects on both cognitive and behavioral aspects of the learning process that could be seen within the span of four weeks.

Initially, about 95% of the learners in the natural classroom setting were observed to depend on AI outputs heavily for their answers, submitting work with little to no edits. During the early stages of discussion, it was noted that around 80% could not properly justify their work, suggesting a disparity between generation and understanding.

There was a gradual change as the intervention went on:

- About 70% were able to improve on rephrasing and ownership of work by halfway through the research period
- Class engagement rose from being low to moderate
- Most students were more open to speaking in English during classroom activities and discussions

Of course, this did not happen uniformly among all the learners.

5.1. Qualitative Insights from Classroom Incidents

Several instances in class served to shed further light on this experience.

In one case, a learner handed in an impressive submission peppered with sophisticated terms. However, upon being asked about the meaning of a certain term, the learner faltered, before admitting, "I have just used an AI product." Although a seemingly insignificant moment, this incident showed the dichotomy between language proficiency and knowledge comprehension.

In another example, review among students brought up an apparently fictional reference. Upon encouragement from the instructor, the learner admitted having failed to check the reference for validity. The resulting debate changed the attitude towards the verification process among other learners.

The third issue involved verbal contributions. While some learners did not take part in discussions at all, others admitted having failed to speak owing to stage fright. With little help, such as focusing on friendly faces during presentations, these students gradually started participating.

Such experiences prove one important observation:

Students' behavior depends as much on emotional readiness as on cognitive skills.

5.2. Discussion: Redefining Success in AI-Supported Learning

However, according to the results of the study, the problem is not in the technologies themselves. It lies in how AI can be used within the educational process. Indeed, AI can be seen as something positive or negative. It all depends on how it can be utilized. Moreover, the traditional evaluation criteria do not seem to be applicable in the context of the use of AI technology in teaching. In order to succeed, students need to demonstrate their ability to:

- Reason and justify;
- Question and validate; and
- Express confidence.

All these aspects relate to another way of looking at human-AI interaction where there is not replacement but rather the improvement of the learning process (Luckin, 2018). This is consistent with the standpoint that although the advent of generative AI has challenged previous methods of learning, it can also serve the purpose of bringing change if one pays attention to human skills (World Economic Forum, 2023).

At the same time, one should pay attention to the limitations of AI technology. While computers can produce the response, they cannot encourage or help with understanding the hesitation or emotional changes of the learner.

Care pedagogy as proposed by Nel Noddings becomes crucial when discussing the topic. Indeed, learning is both cognitive and relational. Therefore, without empathy, all other aspects of the teaching process may become useless.

5.3. Reflection: The Educator as a Cognitive and Emotional Anchor

Perhaps one of the most important realizations from this study is the changing role of the educator.

It was not only about implementing strategies that work; it was also about how they were implemented. The students did not dislike structure, but rather disliked being disconnected. With empathic approach, they were able to listen, think, and grow.

The Good Cop/Bad Cop approach showed its effectiveness in this respect. Through building a relationship first, educators managed to instill confidence and accountability. Nevertheless, such an approach could be quite challenging, since there would be times when greater structure meant less willingness to participate, and vice versa. It had to be balanced throughout the process.

What has been shown here is that:

- Empathy leads to engagement
- Engagement leads to accountability
- Accountability leads to ownership

It is very important for an AI-supported learning environment, because there is a risk of skipping understanding through easy answers.

5.4. Implications for Practice

Classroom-Level Implications

Instructors need to:

- Foster rephrasing to promote ownership
- Engage students in validation exercises to encourage critical thinking skills
- Foster a culture of safety for learners' first-time mistakes
- Tackle emotional issues along with cognitive challenges

The incorporation of RAIED tool will help educators address these issues by allowing them to trace patterns of involvement.

Institutional Implications

Institutions should:

- Train instructors on AI-based pedagogy techniques
- Leverage assessment to emphasize reasoning and communication
- Consider the significance of emotional involvement in learning processes

Strategies focusing on prohibiting AI use may not prove as effective as policies encouraging its usage.

Implications for AI Integration

With growing concerns about developing more human-centered technology, there will be increasing attention towards the development of AI solutions that foster human empathy (Liao & Varshney, 2022). Nonetheless, the role of the instructor in such a process is critical.

Empathy cannot be programmed. It needs to be taught.

6. Limitations and Future Research

The current paper reflects mainly on pedagogical insights gained through observations that are not based on human interactions but rather on passive observations within the confines of professional teaching practice. It is assumed that by keeping the observations confined within the limits of teaching practice without the inclusion of human participants, ecological validity will be preserved.

Time Limitations: Due to the limited time span of four weeks for the instructional cycle of each module, a week has been used for the learner's self-study period. Therefore, observations have taken place within the scope of three weeks. In these three weeks, the main focus has been on delivering and revising the curriculum, which has not provided sufficient time to conduct observations.

Methodological Approach: Passive observation of learning practices was used as a method to avoid disturbing the learning process.

Diagnostic Tool Validity: The RAIED diagnostic tool has been developed as a metacognitive and self-reflective diagnostic tool. Despite the inclusion of reverse scoring questions to minimize the influence of biased responses, the tool lacks extensive empirical verification. However, the main goal is to provide immediate and personalized feedback to students using an AI-based system.

Future Research: Future research might include validation studies on larger populations.

7. Conclusion

The inclusion of generative AI in the educational environment signifies a paradigm change in terms of not only the technology itself but also the process of learning. Although AI can significantly help educators in their tasks, it also poses potential risks regarding dependency, lack of engagement, and loss of ownership on the learners' part. In light of the present findings, such dangers can be avoided using empathic pedagogy, which combines structuration with the ability to perceive emotions. Such approaches will allow leveraging AI in education rather than using it as a shortcut.

With the introduction of the RAIED framework, this research contributes another useful tool for diagnosing and helping students learn with the assistance of AI.

By manipulating the application of AI technology in education, it is possible to maintain humanity at the core of the teaching process while using technological advancements.

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