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Artificial Intelligence augmented
Adaptive Learning Technology (ALT)

An implementation model

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Course sequence and timeline is fixed. (*About Adaptive Learning, 2015*)

Traditional Course that is typical today.

- All learners progress at the same pace
- Grades are he measure of achievements
- All learners progress through *ALL* of the materials
- Learning is punctuated with testing at the same time for all students
- No accommodation for learners who may be slower or faster than the established classroom pace.
- ***One-teacher-many-students***

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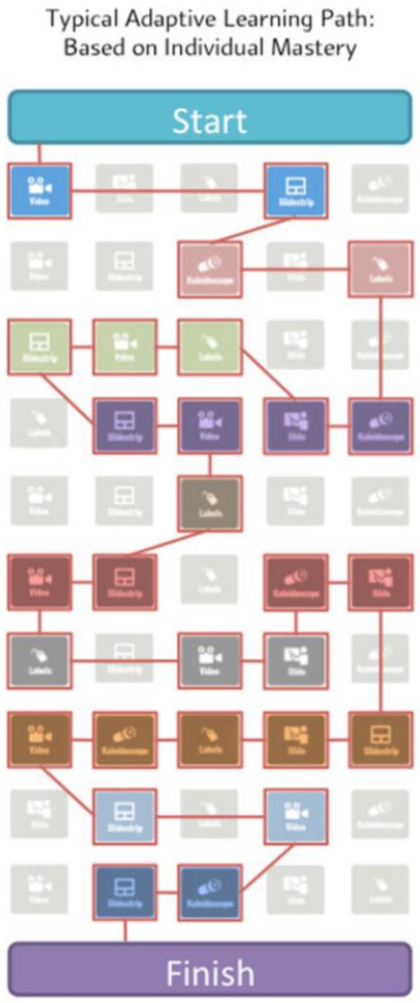

The ALT reconfigures educational content per individual requirements (*About Adaptive Learning, 2015*)

Adaptive Learning Technology

- *Adaptive Learning Technology* (ALT) allows the learner to rapidly progress through or skip content that they already know.
- Pre-testing is used as a tool to sequence learning materials
- Timeline is flexible based upon learner's ability to master the content.

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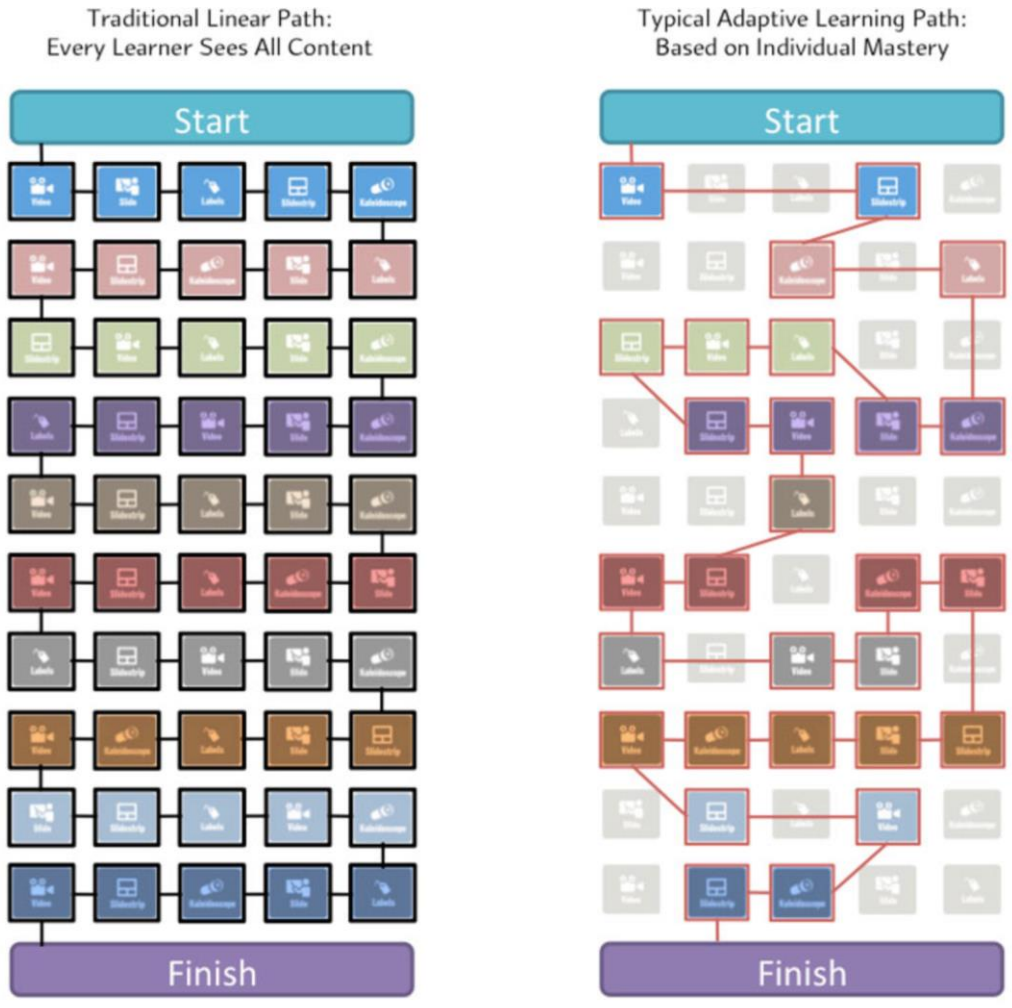
AI augmented Adaptive Learning Technology (AI/ALT)

Begins to resemble a ***mind map*** in supporting learner curiosity with full and evolving personalization .

- Mastery is the only measure
- Timelines and grade levels do not exist
- Content is expanded or contracted to suit each learner needs



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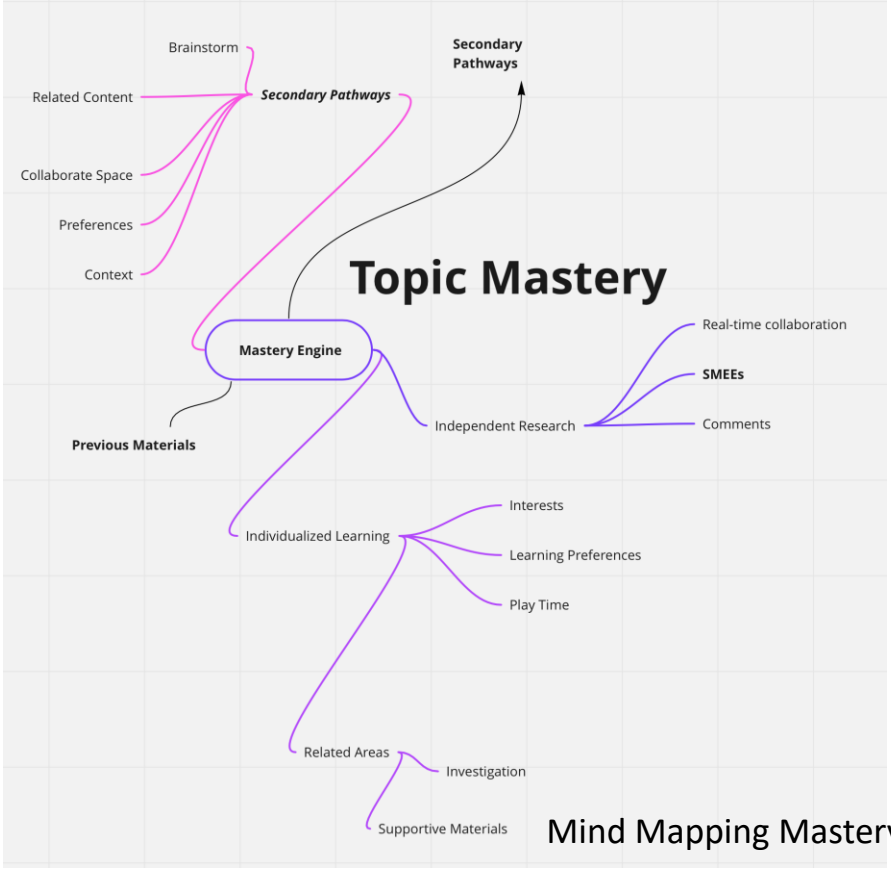

Mind Mapping Mastery (*Gordon, 2020*)

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AI/ ALT also provides a potential solution to *Bloom's 2 Sigma Problem*.

About Mastery

Blooms approach was composed of *Mastery Learning, elimination of timelines and One-on-one tutoring.*

This approach delivered improvements by a factor of two standard deviations, or two Sigma, in student performance.

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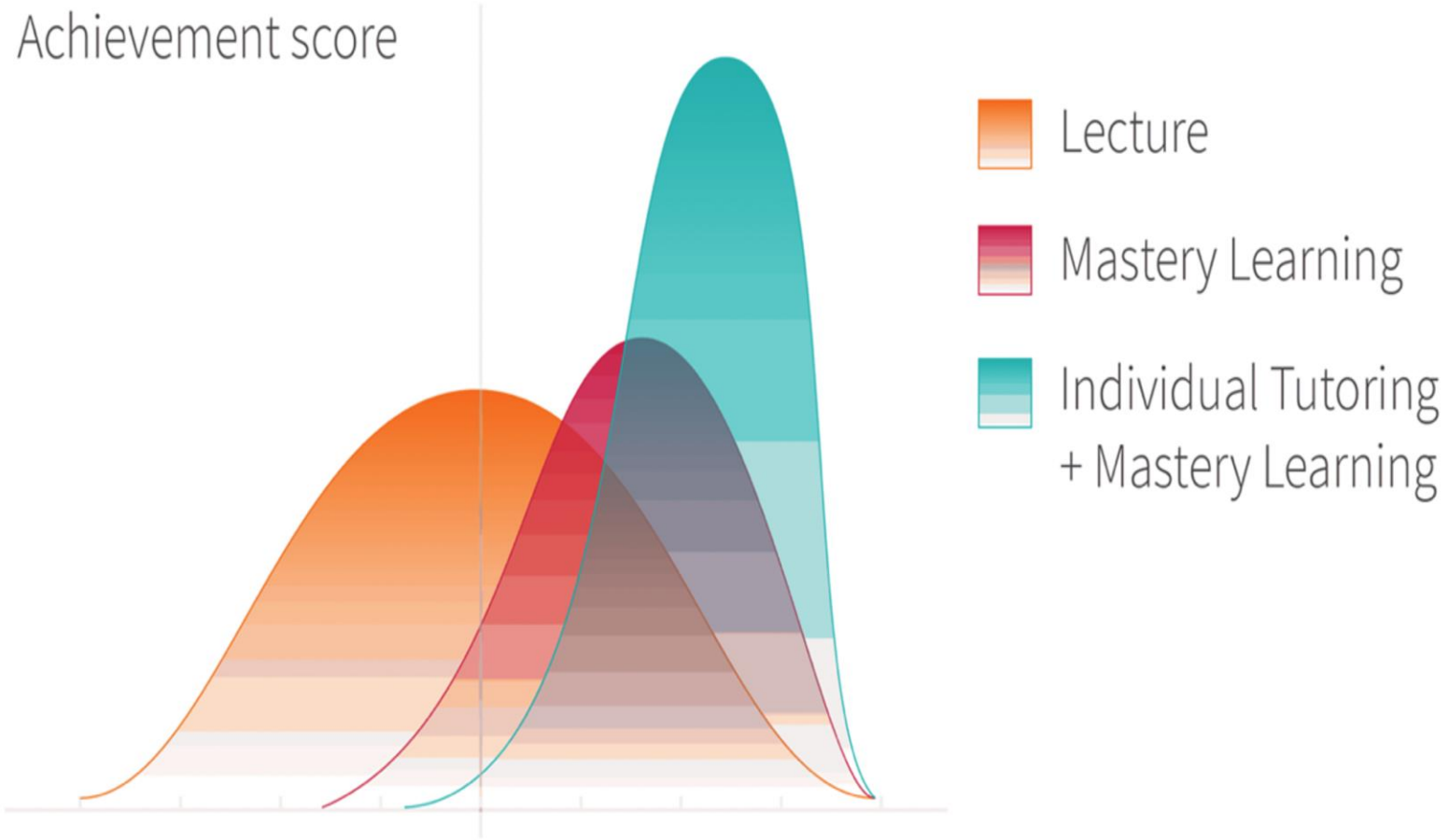
Although deemed too expensive to implement at the time, AI/ALT now provides a means of accomplishing Blooms approach.



Blooms Sigma 2 Problem, Mastery + Tutoring
Benjamin Bloom studied an educational approach which significantly improved the effectiveness of the learning process *(Bloom, 1984).*

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A literature review reveals numerous approaches to the personalization of the educational environment.

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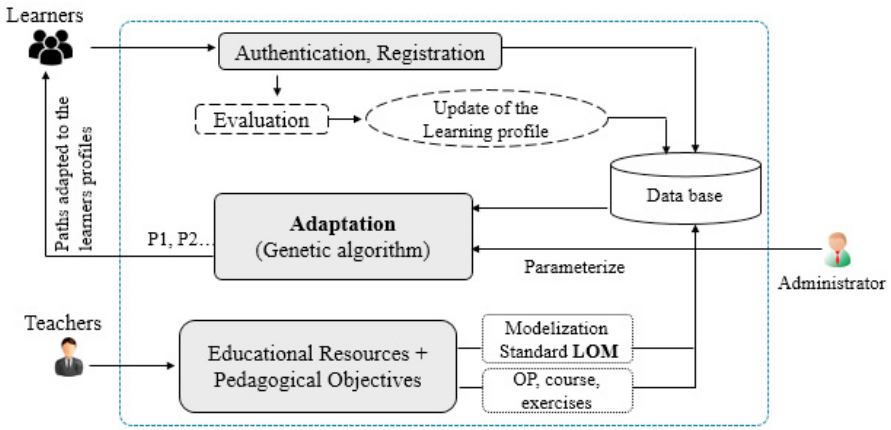
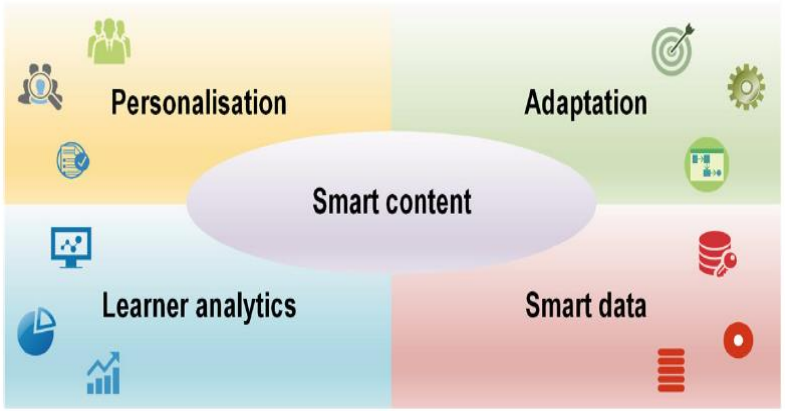
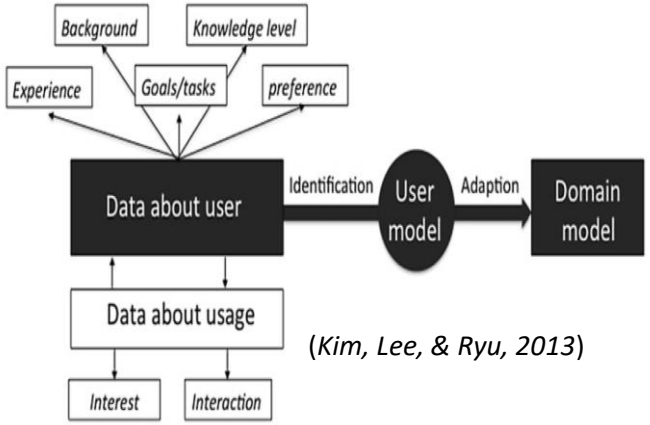


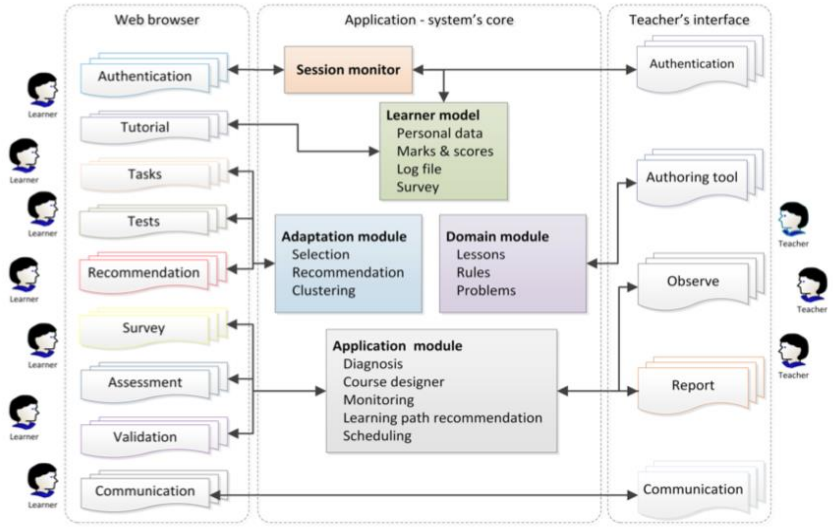
(*Yarandi, Jahankhani, & Tawil 2013*)



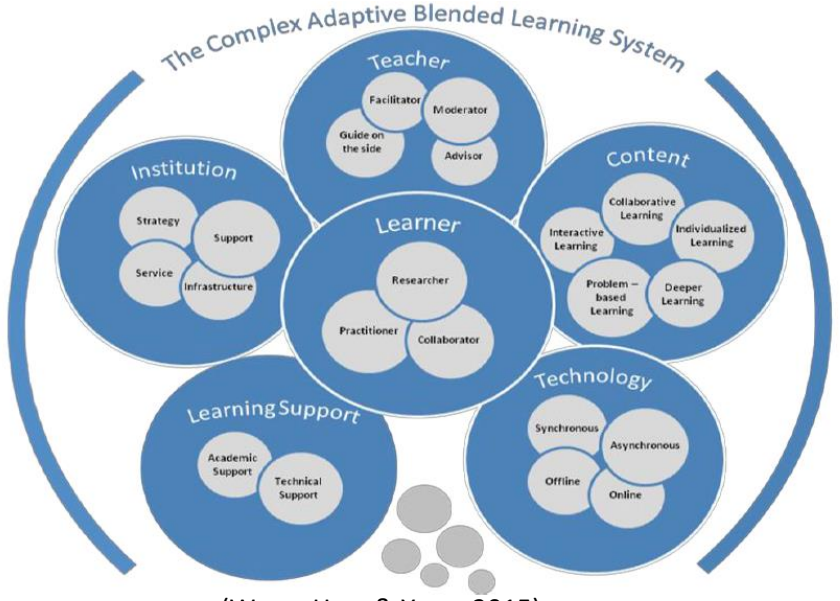
(*Vesin, Mangaroska, & Giannakos, 2018*)



(*Kim, Lee, & Ryu, 2013*)



(*Klašnja-Milićević, Ivanović, Vesin, & Budimac, 2018*).



(Wang, Han, & Yang, 2015)

References on final slide.

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A market analysis reveals that there are variety of AI/ALT solution available today.

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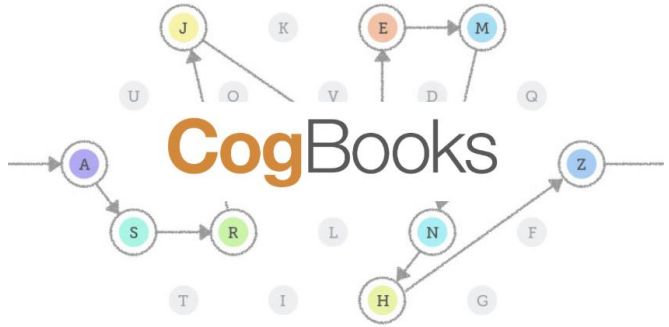
Squirrel Ai Learning

http://squirrelai.com

SMART SPARROW

www.smartsparrow.com



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In summary:

- *AI/ALT is highly effective in solving Blooms Sigma 2 Problem*
- *There are a growing number of peer reviewed studies on AI/ALT*
- *Escalating variety of AI/ALT software companies with robust tools for education.*

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So what is the issue?

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In summary

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So what is the issue?

IMPLEMENTATION.

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Traditional educational environments

Traditional Brick and Mortar
Classroom
One teacher to many students

Typical e-learning
Class environment
One teacher to many students

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Traditional educational environments

Traditional Brick and Mortar Classroom
One teacher to many students

Typical e-learning Class environment
One teacher to many students

- Measured by grades
- Standardized timelines
- Standardized content
- ***One-teacher-to-many students model***

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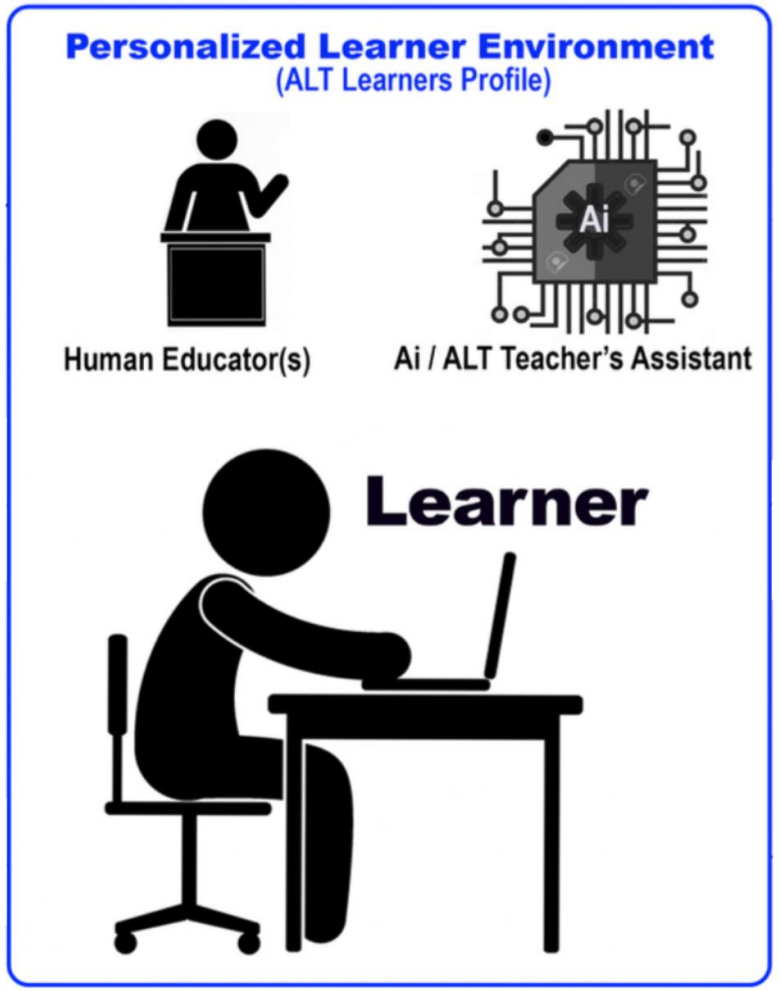
AI augmented Adaptive Learning Technology replaces the traditional *one-to-many* educational environment with a a highly personalized student centric ***one-teacher/ALT-to-one-student*** model.



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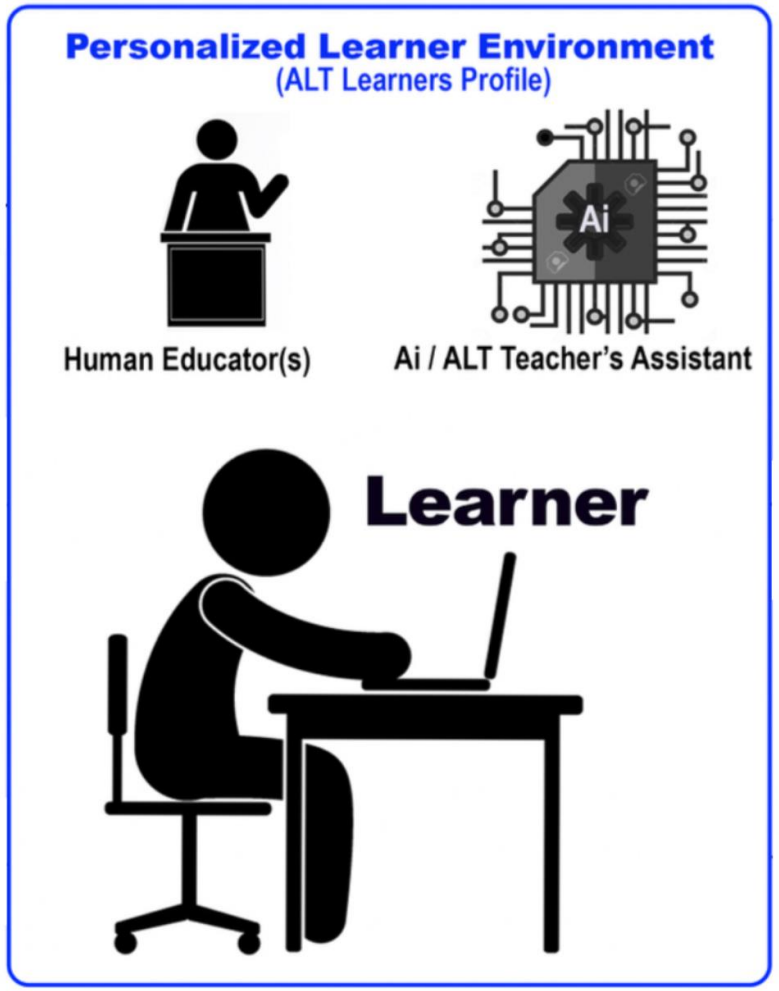
AI augmented Adaptive Learning

- *Highly personalized*
- *Measures Mastery*
- *Supports Curiosity*
- *Understands Interests*
- *Timeline independent*
- ***One-teacher/AI-to-one-student***



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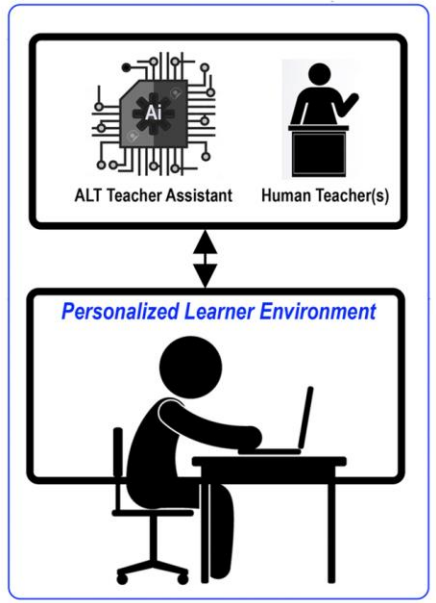
To date, AI/ALT has been *"bolted onto"* – the traditional educational model.

Traditional
Brick and Mortar
Classroom

Current e-learning
model

ALT Student 1:1 Model

Centric to the Student



Simply bolting AI/ALT onto the existing education model fails to fully utilize the full power of this technology.

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The 21st Century.

Our daily lives are a constant experience of *one-to-one*, personalized interactions.

Contrast these daily experiences, indeed, expectations, with an educational model that was designed for a previous age, an age of *one-to-many.*

We can begin to imagine a new education model, a model which attends to the individual and molds itself to meet their personal educational needs.

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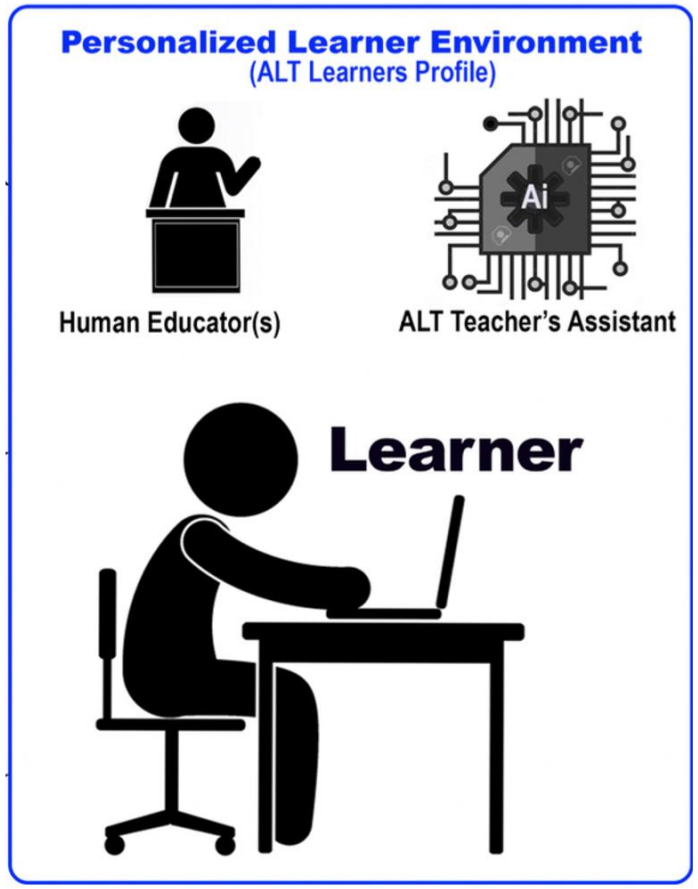
Building a student centric environment with AI/ALT achieves many of the learners personalized support requirements.

The Gordon Model



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The Learner
The learner is central to the *Learner Centric Adaptive Learning Model*.

The Human Educator(s)
The instructor co-inhabits the *Personalized Learner Environment* along with the learner and the learner dedicated ALT.

The Adaptive Learning Technology System as Assistant Teacher
The ALT system handles all personalization and customization of content and one-to-one instructional elements.

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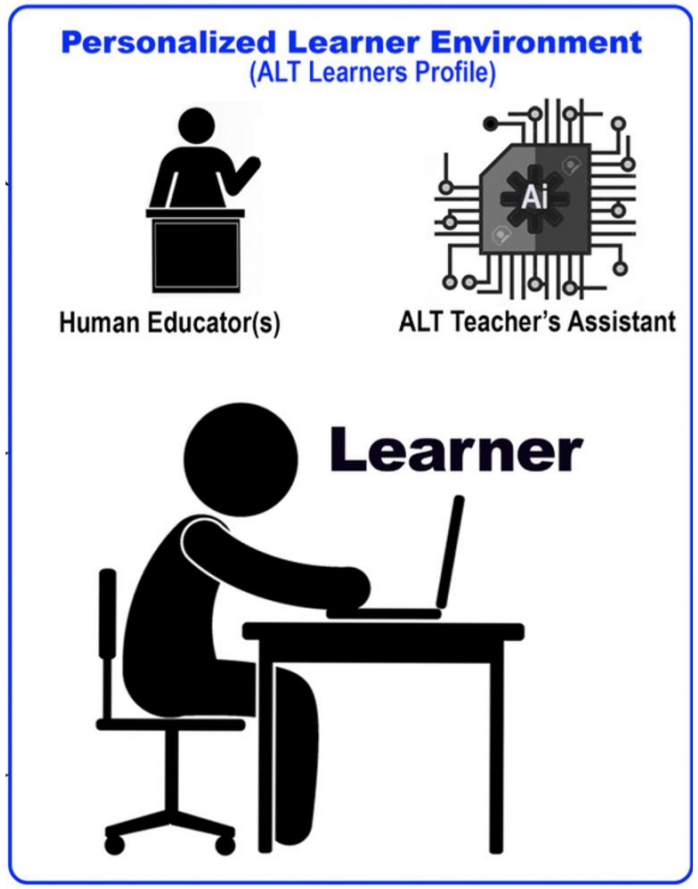
Building a student centric environment with AI/ALT achieves many of the learners personalized support requirements.

But not all.

The Gordon Model



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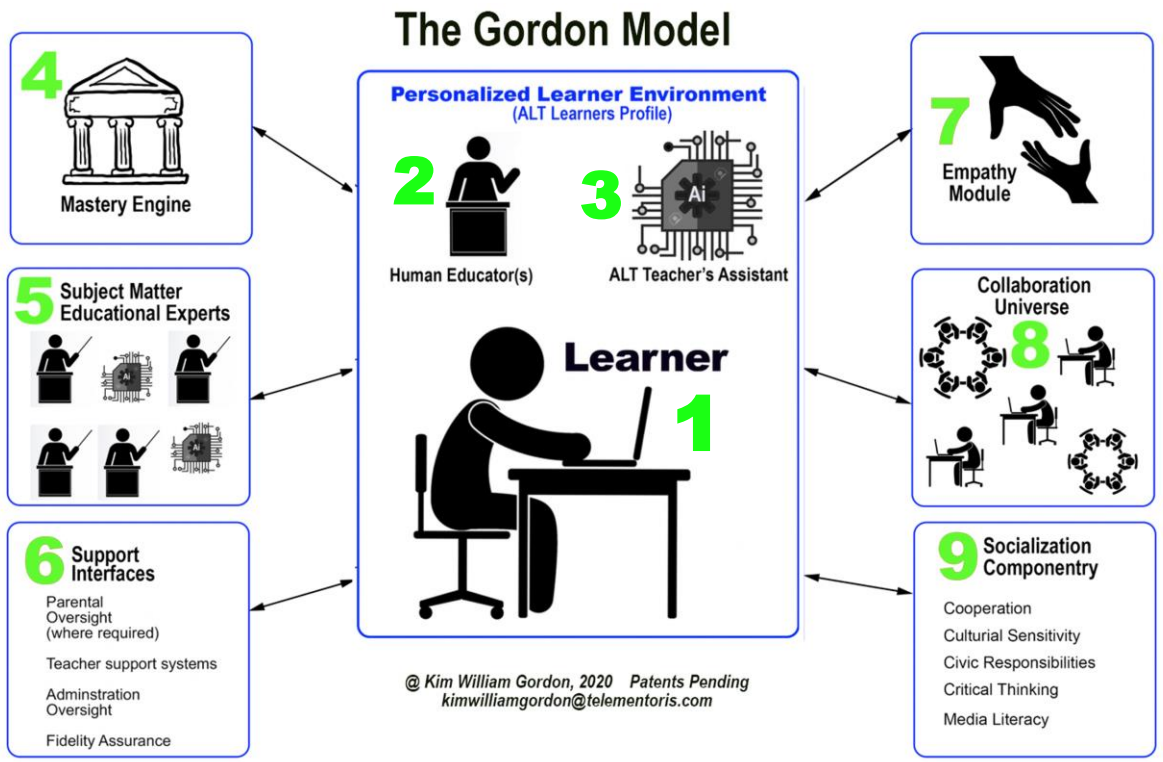
The Gordon Model is the result of research conducted in 2019 and 2020. It is composed of nine components.



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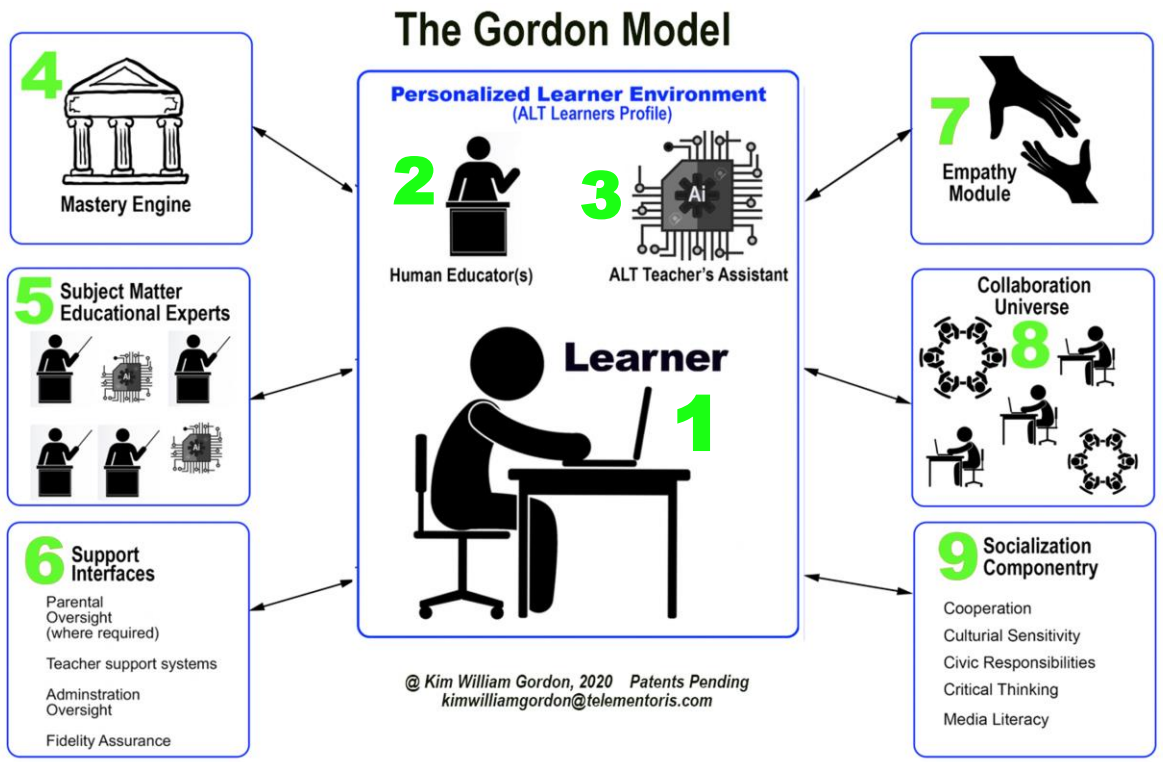

Component 4: The Mastery Engine

The *Mastery Engine* represents the central repository of all educational content it is a peer reviewed resource library that contains pre-test materials and mastery thresholds.

Component 5: The Subject Matter Educational Experts

The *Subject Matter Educational Expert* component (SMEE) provides learner access to a support team composed of both human and AI subject experts as required.

Component 6: Support Interfaces

The need for a fidelity assurance gateway to ascertain adherence training, technology assistance, instructional designers and content development .

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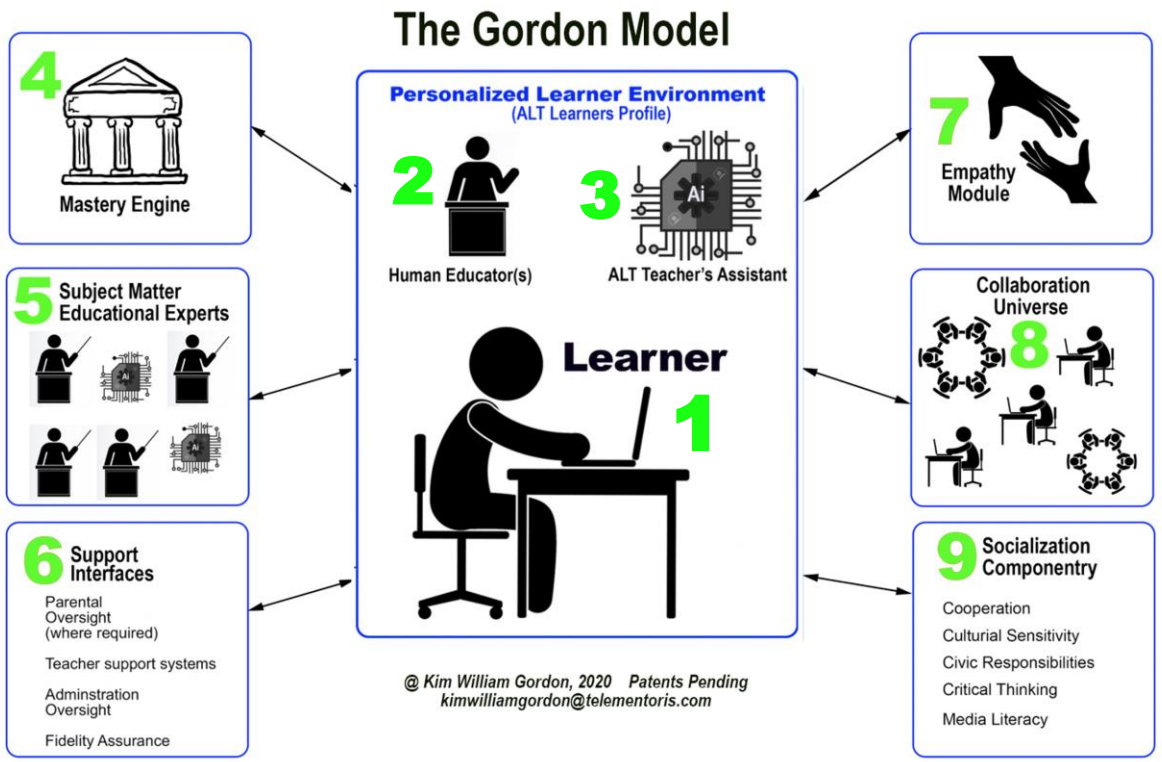

Component 7: Empathy Module
A means of monitoring and reporting on the learners emotional and even physical state (wellbeing). This data could be used to flag conditions when intervention by outside professionals were required.

Component 8: The Peer / Collaboration Universe
The *Peer / Collaboration Universe* provides learner access to an extended team of learners exploring the same educational content.

Component 9: Socialization Componentry
Area would be utilized for student, peer and extended network interactions designed to facilitate personal growth, civility, mutual respect and compassion.

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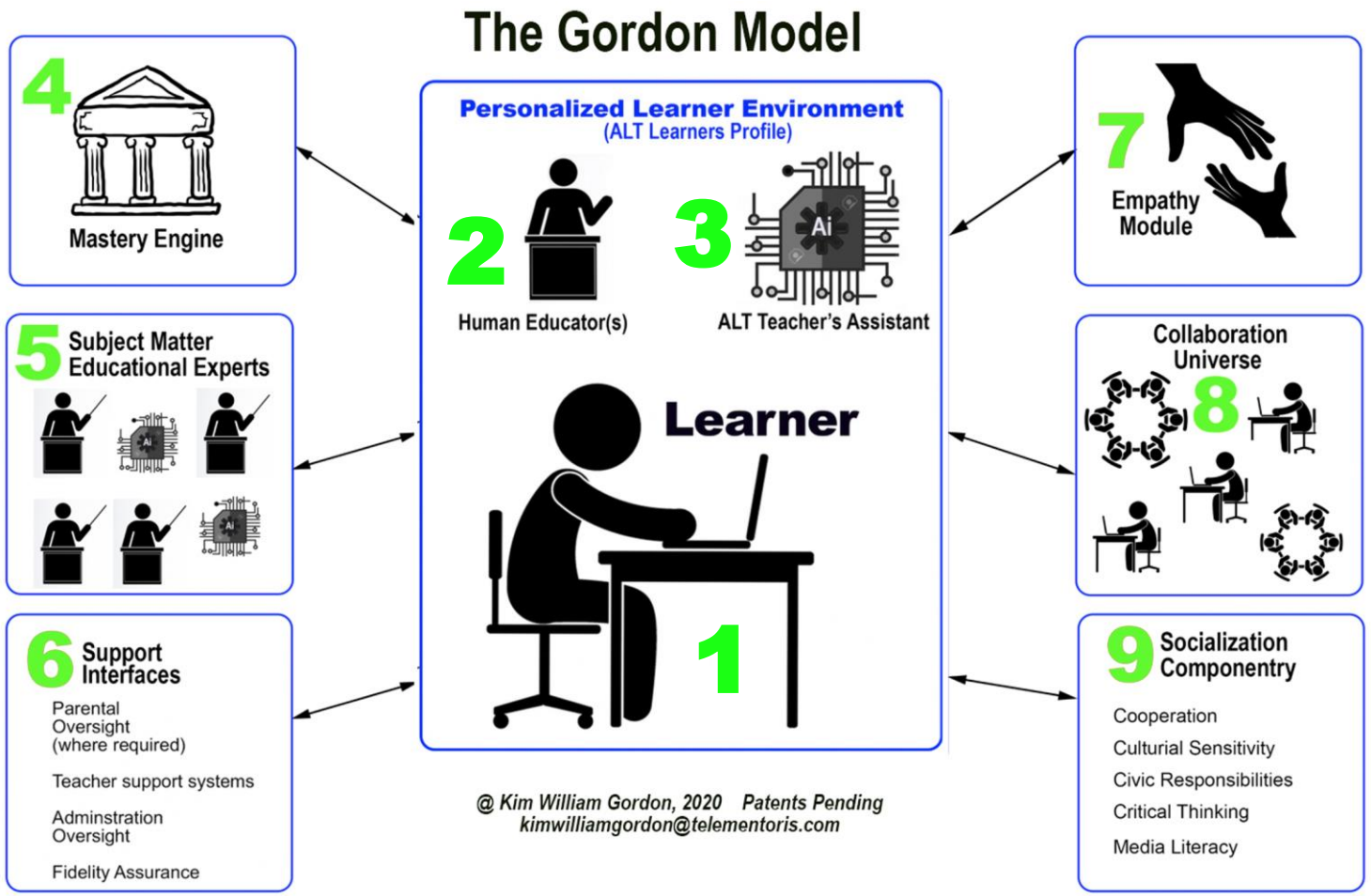

Results:

- **Highly personalized**
- **Supports Mastery**
- **Provides emotional support when needed**
- **Connects a global network of learners**
- **Is supported by SMEEs**
- **Is driven by a common educational content library that is continuously peer reviewed and updated**
- **Supports the teacher in providing "just in time" education**
- **Creates an AI model that is dedicated to the individual**
- ***The learner succeeds***

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"[ALT] would have allowed me to follow my passion at my own pace. This system would have eliminated the feeling of me being a failure."- STUDENT08 comment, dissertation research "*A conceptual design for an Adaptive Learning Technology Model*" (Gordon, 2020)

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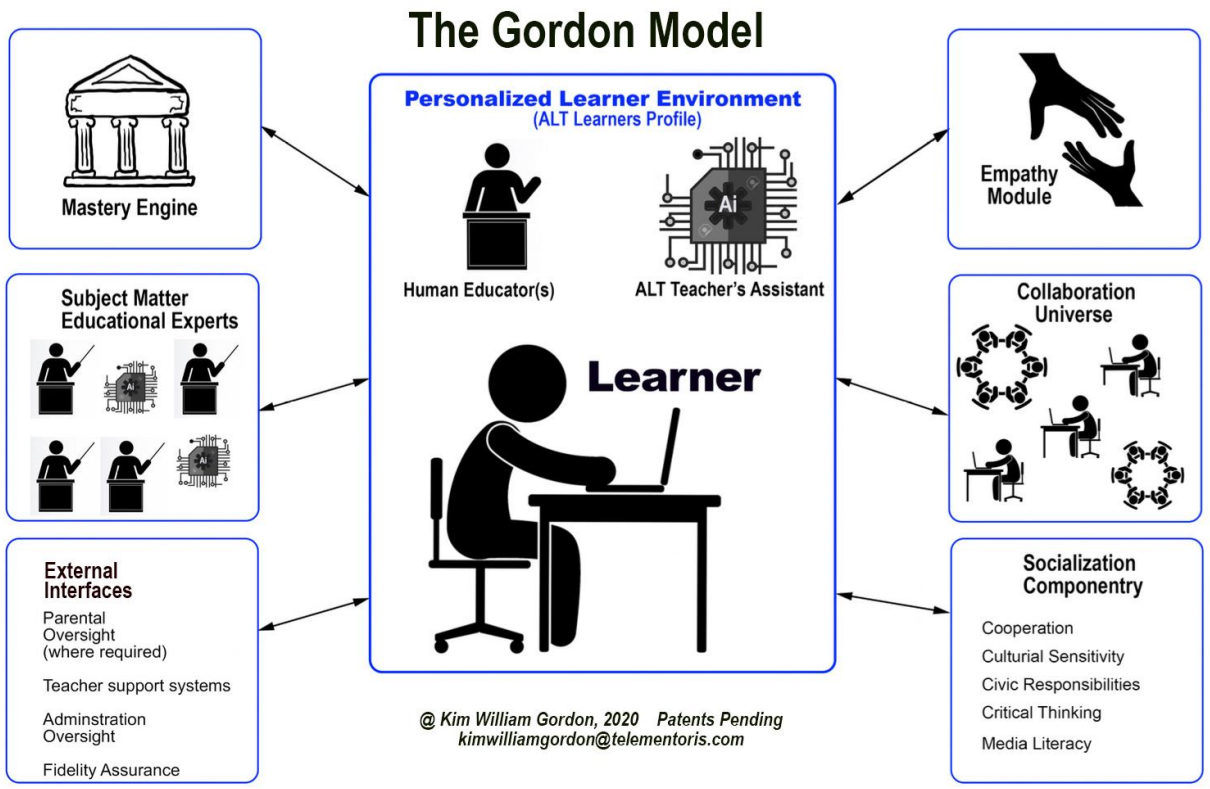

Additional information

The organizational implementation of AI augmented Adaptive Learning Technology within a highly modified educational setting.

Synapsis:
http://bit.ly/KimWilliamGordonPhD
Dissertation (open access):
http://bit.ly/KimWilliamGordonPhDdissertation
Overview of the implications of Adaptive Learning Technology:
https://bit.ly/32ZdML1

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Thank you.

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