Empowering Teaching and Learning
Using AI

W. Lewis Johnson, PhD

alelo®
Thought-leader, researcher, published author & entrepreneur in advanced educational methods & technologies

Applying artificial intelligence & gamification to education & training throughout his career

Former director of the Center for Advanced Research in Technology for Education at the University of Southern California

Speaks many languages, has coffee farm in Hawaii, mixes spirits (legally), sings opera

Computer science (AI in education): Yale
Linguistics: Princeton
Alelo Webinar Series on the Future of AI in Education and Training

To provide insight into the promise and potential of this new technology, Alelo offers a webinar series on the Future of AI in Education. We will look at the impact of AI on the experience of learners and teachers, the education and training industry, and the global economy. Seminar speakers will include Alelo experts as well as other thought leaders in the global community of artificial intelligence in education.

READ MORE
Can AI fix education? We asked Bill Gates

How personalized learning is changing schools

By Casey Newton | @CaseyNewton | Apr 25, 2016, 1:07pm EDT
Intelligent machines will replace teachers within 10 years, leading public school headteacher predicts

Human tutors will be sidelined in near future as AI takes central role in education, suggests Sir Anthony Sheldon of Wellington College

John von Radowitz · Monday 11 September 2017 08:30 · 11 comments
Measuring Teacher Effectiveness

Teachers Matter
Multiple Choices
Tests and the Teacher
Value-Added Modeling
Student Growth Percentiles
Leadership Matters

FAQ
Experts
Research and Commentary
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Teachers Matter: Understanding Teachers' Impact on Student Achievement

Many people emphasize the importance of good teachers, and many local, state, and federal policies are designed to promote teacher quality. Research using student scores on standardized tests confirms the common perception that some teachers are more effective than others and also reveals that being taught by an effective teacher has important consequences for student achievement.

Teachers matter more to student achievement than any other aspect of schooling.

Many factors contribute to a student’s academic performance, including individual characteristics and family and neighborhood experiences. But research suggests that, among school-related factors, teachers matter most. When it comes to student performance on reading and math tests, a teacher is estimated to have two to three times the impact of any other school factor, including services, facilities, and even leadership.
So how can AI help?
• Giving machines the ability to seem like they have human intelligence

NOT A TEACHER REPLACEMENT!
AI is an Aide Intelligente!
Capabilities of AI systems:

- **Understanding**: Collect, analyze and interpret data
- **Decision-making**: Take actions to achieve goals
- **Learning**
Nunan (1991) wrote, "success is measured in terms of the ability to carry out a conversation in the (target) language."

Example: Learning to speak a foreign language
733 Teachers

70% SPEAKING

SKILLS RANK
(IN ORDER OF IMPORTANCE)

10% LISTENING
8% WRITING
7% READING

Global Teaching Speaking Survey, Cambridge University Press
It’s hard to teach speaking

• It’s hard to set up authentic situations in class
• Teachers must participate, monitor, and provide feedback
• Students can’t practice when the teacher is not available
AI now enables systemic learning solutions

1. Immersive practice environments
2. Formative assessments
3. Feedback
4. Personalized learning
5. Performance analytics for learners, teachers, & administrators
Example: Buy a Train Ticket
You're taking a trip to New York from May 1st to May 7th. You have to be at a Broadway show at 8:00PM in New York on May 1st. You have $300 to spend on a train ticket to New York and a return ticket home. You can have up to two bags. You’ll need to:

- Say where you want to travel.
- Say the dates you want to depart and return.
- Ask questions about the departure and arrival times of trains.
- Stay within your budget.

Trip to NYC
- May 1 - May 7
- $300 Budget

HAMLET
New York City
May 1, 8PM
Row V, Seat 139
Good morning.

Hi. Welcome to the Metropolitan train station. Where are you traveling to?

Ask her to repeat what she said.
Tell her where you would like to go.

Can I get a ticket to New York, please?
Are there trains to New York City?
I would like to go to NYC.
Good morning.

Hi. Welcome to the Metropolitan train station. Where are you traveling to?

I'm going to New York.

Great! I can help you plan your trip to New York. What day would you like to depart?
Good morning.

Hi. Welcome to the Metropolitan train station. Where are you traveling to?

I'm going to New York.

Great! I can help you plan your trip to New York. What day would you like to depart?

I would like to leave on 1st met.

I have a couple of trains that day. Does the train leaving at 2:00 PM work for you?

Tell her you want the ticket.

Ask if there is another train.

Tell her you don't want the ticket.

Ask how long the trip is.

Ask her to repeat what she said.

Ask when the train will arrive.
I'm going to New York.

Great! I can help you plan your trip to New York. What day would you like to depart?

I would like to leave on 1st met.

I have a couple of trains that day. Does the train leaving at 2:00 PM work for you?

Okay.

Okay. A one way ticket in first class is $175 and a coach ticket is $100. Would you like a first class or coach ticket?

Trip to NYC
- May 1 - May 7
- $300 Budget

HAMLET
New York City
May 1, 8PM
Row V, Seat 139
Feedback

Unfortunately, you weren't able to say everything you needed to say in the conversation. Please review the information in the Feedback below and in the Practice Exercises that follow. That will help you to perform better on your next try. When you are ready, play again.

Ask questions about the departure and arrival times of trains.

You didn't ask questions about the departure and arrival times of trains. Remember, to ask what time a train will leave and arrive.
An adverbial phrase is a group of two or more words that act as an adverb. Adverbial phrases of time describe when or for how long something happens. Here are some common adverbial phrases of time.

<table>
<thead>
<tr>
<th>Adverbial Phrase</th>
<th>Example</th>
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<tbody>
<tr>
<td>On May first</td>
<td>This Saturday / week / month / year</td>
</tr>
<tr>
<td>On Monday</td>
<td>Last Saturday / week / month / year</td>
</tr>
<tr>
<td>At eight o’clock</td>
<td>Next Saturday / week / month / year</td>
</tr>
<tr>
<td>Right now</td>
<td>All day / week / month / year</td>
</tr>
<tr>
<td>In five minutes / hours / days / weeks / months / years</td>
<td>For five minutes / hours / days / weeks / months / years</td>
</tr>
<tr>
<td>Before / After the movie</td>
<td>From May first to May seventh</td>
</tr>
</tbody>
</table>
Ask Emma what time the train will arrive.

Click the Record button to respond.

Outstanding!
You asked what time the train will arrive!
I heard: what time will the train arrive
Trip to NYC
- May 1 - May 7
- $300 Budget

HAMLET
New York City
May 1, 8PM
Row V, Seat 139
Data-driven development

1. Collect learner behavior & performance data
2. Train AI models – learn, analyze, formulate enhancements
3. Deliver learning product

- Learn, analyze, formulate
- Deliver learning product
Next: Data-driven teaching

<table>
<thead>
<tr>
<th>simulation</th>
<th>completions</th>
<th>full</th>
<th>partial</th>
<th>firstCompletion</th>
<th>lastCompletion</th>
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Next: Data-driven teaching
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Towards an AI-driven learning ecosystem

- AI embedded everywhere: data-driven course authoring, course delivery, data collection
- Integrate AI-driven learning into digital textbooks and other online learning products
- Leverage advances in AI tools, for learning purposes
- Support a global community of publishers & content developers using AI-driven tools
Application to a range of soft skills

Language and culture

Healthcare & sales communication skills

Workplace communication skills

Teacher training